College Catalog
2011 - 2012
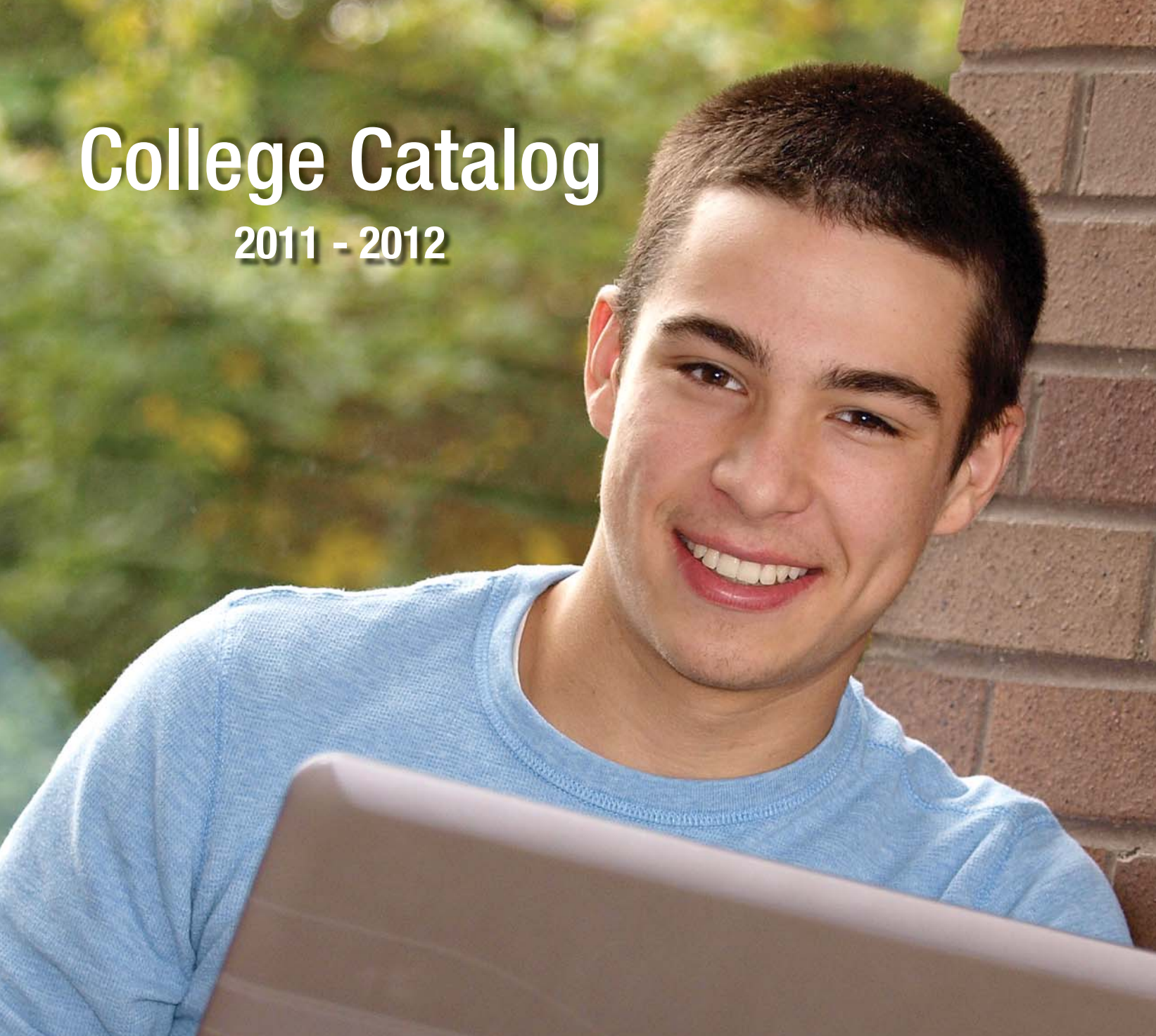
Northeast | **We Are Futuremakers**
Wisconsin Technical College

College Catalog

(800) 422-NWTC • www.nwtc.edu

Northeast
Wisconsin Technical College

NWTC's Vision

We will provide the

highest quality,

life-long learning

opportunities that are:

- What you want

- When you want

- Where you want, and

- How you want them

So you may continue learning

and successfully engage in

a career that enhances

your quality of life

in a global community.

Mission Statement

We are a two-year technical college, serving Northeast Wisconsin by providing education, training, and lifelong learning opportunities for individuals and businesses leading to the development of a skilled workforce. Our customers stimulate the economic vitality of our district as a result of the application of skills and knowledge acquired through the completion of certificates, degrees, diplomas, and courses.

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Who to Contact

General Information

Green Bay Campus .... (920) 498-5400
or toll-free (800) 422-NWTC
Marinette Campus..(715) 735-9361
Sturgeon Bay Campus... (920) 746-4900
Financial Aid (Enrollment Services) .... (920) 498-5444
Registration Information (Enrollment Services) .... (920) 498-5444
Transcripts .... (920) 498-5579
Veteran Services (Enrollment Services) ....(920) 498-6292

Student Services

Admissions and General Program Information .... (920) 498-5444
Employment Assistance.......................................(920) 498-5528
Multicultural Center..(920) 498-5720
Returning Adult Services.....................................(920) 498-5734
Special Needs.. (920) 498-6904
TTY Access ....(920) 498-6901

Tours...920-498-6250

Career Services...920-498-6250

Skills Center

Communications/Reading Lab...(920) 498-5686
Assessment/Testing Center..................................(920) 498-5427

District Offices..(920) 498-5500

Distance Learning-Video Courses...................(920) 498-5571

Interactive Television-TV Courses...................(920) 498-5424

Internet Courses .... (920) 498-5503

Employers:

For contracted training and consulting, please call NWTC's Corporate
Training and Economic Development ....(920) 498-6911

Toll-free–(800) 422-NWTC
Visit our website at www.nwtc.edu

Impressive Facts

- The College serves approximately 41,500 students annually.
- NWTC offers over 100 associate degrees, technical diplomas, and apprenticeships; plus nearly 100 certificates.
- NWTC has had enrollment growth of 79 percent in the past 13 years and employer demand for our graduates is up 300 percent during that same time period.
- 2,434 students graduated from NWTC in 2010.
- 88 percent of 2010 graduates available for employment were employed six months after graduation, and 71 percent of those had jobs in their field of study.*
- 95 percent of 2010 employed graduates got jobs in Wisconsin, and 73 percent work right here in the district.*
- NWTC's 2010 associate degree graduates were earning a median annual salary of $35,100 six months after graduation.*
- NWTC served 1,133 businesses in 2009-2010 with customized training either onsite or in the classroom, training 25,250 employees.
- Founded in 1912, NWTC serves all or part of nine counties in Northeast Wisconsin. Counties include: Brown, Door, Marinette, Oconto, Kewaunee, Florence, and parts of Shawano, Outagamie, and Manitowoc.

NWTC 2010 Graduate Follow-Up Survey

Out of 5,000 institutions nationwide, NWTC ranks:

- 37th for the number of associate degrees awarded in Precision Production; 1st in Wisconsin
- 30th for the number of associate degrees awarded in Business, Management, Marketing, and Related Support Services; 1st in Wisconsin
- 38th for the number of associate degrees in Engineering Technologies/ Technicians; 1st in Wisconsin
- 20th for the number of associate degrees in Communication Technologies/Technicians
- 50th for the number of associate degrees awarded to American Indian graduates; 2nd in Wisconsin (tied with College of Menominee Nation)
- 52nd for the number of One-Year Certificates
- 73rd for the number of Two-Year Certificates

(Source: U.S. Department of Education Data published in Community College Week)

President's Message: Welcome, Futuremaker

Welcome to the college where you can make your future.

You may already know that an NWTC education provides lasting career benefits and a basis for lifelong learning. That's why, in the past five years, half of the adults in our District have received education and training through NWTC. That's why half of the high school seniors in our District enroll at NWTC within three years after high school graduation. That's why we want to be your college.

If you are still learning about NWTC, be ready to be amazed. Here, you will find faculty and staff who can spark your curiosity, expand your knowledge and foster your potential. Meet inspiring students of all ages who are mastering some of today's most advanced, complex technology. Discover innovative programs that offer essential training for Wisconsin's workforce. Learn how you can make a real difference in the world.

You may see the phrase "We Are Futuremakers" in your community. That message celebrates the students, faculty, staff and partners of NWTC. It celebrates the way Northeast Wisconsin uses creative thinking, hard work, community spirit and superior skills to stay on the cutting edge. It celebrates you–your achievements, your goals, your determination and your abilities.

So be proud. You are choosing the path that helps you and your community do more, today and tomorrow.

We Are Futuremakers.

And you're one of us.

H. Jeffrey Rafn, Ph.D.
President

District and Campus Information

Northeast Wisconsin Technical College is a publicly supported, high technology college working closely with businesses, residents and students to provide the education and services that keep Northeast Wisconsin strong.

Wisconsin's Technical Colleges were founded to train the workforce. In the early 1900s, most workers learned both job skills and academic skills from their apprenticeship employer. In order to standardize young workers' skills in reading, writing, and math, the State of Wisconsin promoted the creation of city vocational schools. Schools sprang up in Green Bay and Marinette in 1912, followed in 1941 by Sturgeon Bay, serving working boys and girls ages 14-18. The schools eventually grew to serve adults of all ages, whether or not they were employed or apprenticed. In 1968, the three schools joined to become a single district in the Wisconsin Technical College System, serving part or all of nine counties.

Today, NWTC offers 86 associate degree and technical diploma programs, plus certificates, contracted business services, personal enrichment and continuing education. Due to increasing demand, the College has added 40 percent to its facilities District-wide and added 66 percent to its full-time-equivalent student count since 2001. Each year NWTC serves over 40,000 people as they enter the workforce, change careers, gain high-tech new skills, start a business, or meet personal or workplace goals.

Education Where, When, and How Customers Want It

NWTC is committed to serving all learners, and every learner comes with different strengths, goals and needs. The College offers diverse learning opportunities to increase public access to education.

- NWTC Regional Learning Centers bring classes, basic education, employer services and student services to sites throughout Northeast Wisconsin.
- Corporate Training and Economic Development services, including contracted training and technical assistance, are offered District-wide, often at the employer's facility.
- Credit transfer agreements with the University of Wisconsin System and public and private colleges allow students to transfer NWTC credits into bachelor's degree programs, often saving money and travel time.

- Many ways of learning use technology, non-traditional scheduling, and innovative teaching techniques to enable more people to continue their education. Options include online, weekend, accelerated, self-paced and videotaped classes.
- Basic skills education can prepare students to enter college, meet workplace and academic needs, earn High School Equivalency Diplomas (HSED), or General Education Development$_®$ (GED) Certificates, and fulfill personal enrichment goals.
- Short-term certificates, seminars, and workshops allow busy customers to gain precisely the information and skills they need.

Together, these flexible offerings allow more people to access education in traditional, new, and emerging technologies, serving all Northeast Wisconsin communities.

GED$_®$ and GED Testing Service$_®$ are registered trademarks of the American Council on Education$_®$ and may not be used or reproduced without the express written permission of the American Council on Education.

Core Abilities

NWTC has identified Core Abilities that benefit all students, beyond the context of any specific course. The College supports the following skills for all graduates of NWTC:

- Communicate Effectively
- Think Critically and Creatively
- Work Cooperatively and Professionally
- Solve Problems Effectively
- Value Individual Differences and Abilities
- Demonstrate Personal Accountability
- Demonstrate Community and Global Accountability

Green Bay Campus

Green Bay Campus

2740 West Mason Street
P.O. Box 19042
Green Bay, WI 54307-9042
(920) 498-5400 or (800) 422-NWTC

NWTC-Green Bay is the main campus, featuring the District offices and specialized learning centers in business and information technology, health occupations, emergency response, construction, manufacturing and more.

As a result of Northeast Wisconsin's support of NWTC's 2001 referendum, several new buildings have been completed since 2001 to meet employers' need for additional high-skill workers and to allow area residents to pursue rewarding careers.

- The Health Sciences Center houses state-of-the-art equipment in nursing, dental, and allied health specialties. The N.E.W. Clinic site at NWTC allows the College to admit more health sciences students, address the growing health care worker shortage and provide health care for the uninsured.
- The Manufacturing Technology Center offers flexible space where students and area employees can work with interconnected electrical, electronic and mechanical systems. Both classroom and self-paced formats are available.
- The Student Center offers space for relaxation and learning, with a digital lounge, coffee shop, an expanded library, student services, the Book Store and cafeteria. It won a 2005 city beautification award from Green Bay civic leaders.
- The Business Assistance Center offers entrepreneurs training, support, counseling, information, and access to resources to assist in small business success. Partners including NWTC, UW-Green Bay, the Advance Business Incubator, SCORE and Urban Hope collaborate to help entrepreneurs start or grow their businesses.
- The Landscape Horticulture Learning Center features one of the Midwest's few landscape construction labs. It opened in 2007 at the Green Bay Botanical Garden and won a 2007 city beautification award for environmental design. NWTC is believed to be the first two-year college in the United States to have a public botanical garden located on its campus.

- The Public Safety Training Center offers specialized training for police, firefighters, EMTs and other emergency responders. The Tactical Training Center allows multi-disciplinary, scenario-based training in a fully customized environment. The Cinetronic Range helps police and corrections officers train in effective communications, tactics and least-force response. The three-story burn tower allows firefighters to practice fire-fighting and lifesaving techniques in blinding smoke and temperatures above 400 degrees.

The campus offers simple and convenient access from U.S. Hwy 41. It also is accessible by city bus and local taxi services and is near Austin Straubel International Airport.

Sturgeon Bay Campus

229 N 14th Avenue
Sturgeon Bay, WI 54235-1317
(920) 746-4900

The Sturgeon Bay campus is a 60,000 square foot facility in beautiful Door County, the Midwest's number one tourist destination. WW II saw the creation of a vocational school to serve the need for trained workers in the area's shipbuilding industry. The Diesel program began in 1961, while the Nursing program began in 2002. The first phase of the Sturgeon Bay campus was built in 1971. Subsequent additions in 1977, 1992, and 2003 have resulted in the current campus.

The campus offers **complete programs** in:
- Accounting
- Business Management (*Business Management Sub-Plan only*)
- Diesel and Heavy Equipment Technician
- Diesel Equipment Technology
- Hotel and Restaurant Management
- Leadership Development
- Office Professional
- Nursing Assistant
- Nursing-Associate Degree
- Practical Nursing
- General Studies Transfer

The campus offers **the first year** of the following programs:
- Administrative Professional
- Health Care Business Services
- Health Information Technology
- Marketing

The campus offers a full range of **certificates** for those interested in developing specific technical skills. Many credits earned can be transferred into a related NWTC diploma or degree program.

An advisor and counselor are available to the students on the Sturgeon Bay campus, providing career counseling, admissions information and assistance with school issues. The advisor and counselor work closely with Enrollment Services offices on the Green Bay campus to see that students are provided with a full range of services.

The campus has a student government that plans social activities and community services. Student activities include a blood drive, collecting food for the local food pantry, adopt-a-highway, Habitat for Humanity, and campus wide social events.

The Diesel Club assists student government in sponsoring campus activities. The Diesel Club is involved in SkillsUSA and has a strong history of success at the national organization's competitions. The club takes overnight field trips to companies like Case/New Holland and Caterpillar.

Basic Education is offered through a lab setting, with morning, afternoon, and evening hours. The lab classes can help students prepare for college, succeed in classes, or earn an HSED or General Education Development (GED) Certificate.

Sturgeon Bay Campus

District and Campus Information

Marinette Campus

1601 University Drive
Marinette, WI 54143
(715) 735-9361

NWTC-Marinette is located on the southern edge of the city of Marinette. Situated on the waters of Green Bay, the city is a hub of recreation, industry, and retail. Marinette and its sister cities of Peshtigo and Menominee, Michigan, jointly offer citizens a wealth of diverse social and economic opportunities. In August 2002, construction was completed on a 23,000 square foot addition to the campus. This addition, as well as other significant remodeling to the Marinette campus, focused on community needs in the areas of health sciences, trades and technical, and business and information technology.

In the summer of 1999, the construction of a Wisconsin Job Center was completed on the Marinette campus. The Marinette Job Center offers job placement services, career development and planning, and guidance on occupational education and training opportunities.

The Marinette campus is a full service campus offering a variety of full- and part-time programs, plus convenient scheduling options for students with diverse needs:

- Associate degree program in Fire Protection Engineering Technology, which was developed as a result of a unique industrial base in the Marinette area.
- Associate degree programs in Computer Support Specialist, Accounting, Automotive Technology, Administrative Professional, Leadership Development, Marine Engineering, Nursing, and Physical Therapy.

- Technical diploma programs in Practical Nursing, Machine Tool-CNC Technician, Automotive Technician, Computer Support Technician, Marine Construction, Office Professional, Welding, Nursing Assistant, and Emergency Medical Technician-Basic.
- Certificate programs in General Studies, Supervision, Electrical and Mechanical Maintenance, Medical Transcription and Coding, Computer Aided Drafting, Child Care, Software, APICS certification and many more.
- Convenient ways of learning: evening classes and programs, weekend college, certificates, self-paced learning, accelerated learning, Technical College of the Air, Interactive Television, and online learning.

Services at the Marinette campus include a full Career Center; learning labs providing support with math, reading and study skills; Returning Adult Services; Special Needs Services; career assessment, counseling, and admissions. An active Student Senate and program-related clubs provide high quality extra-curricular activities.

Corporate Training and Economic Development

The NWTC Corporate Training and Economic Development department provides customized, flexible, cost-effective and convenient training to more than 1,000 businesses throughout the District annually–allowing them to achieve and maintain peak efficiency in the global marketplace. Corporate Training and Economic Development trains today's employees for the skills of tomorrow with entry-level to advanced training, international services, seminars and technical assistance.

For more information, call (920) 498-6911; (800) 422-NWTC, ext. 6911; or go to **https://corporatetraining.nwtc.edu**

Marinette Campus

**Associate Degree
and
Technical Diploma
Programs**

Of those 2010 graduates available
for employment,
71% are working in jobs
related to their chosen career field.

Employed
88%

Seeking
Employment
12%
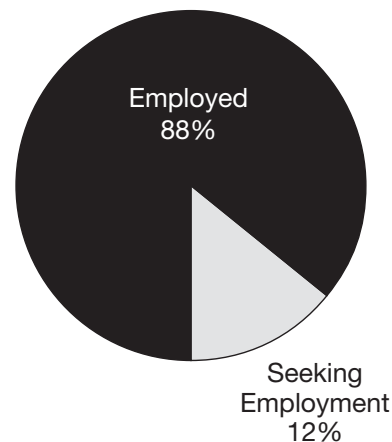
District and Campus Information

Regional Learning Centers

From Florence to Wrightstown, Bonduel to Kewaunee, District residents are taking advantage of the learning opportunities provided by NWTC's regional learning centers. With five center locations and extended outreach offerings to 30 communities, busy adults can get an excellent education, update their skills, change careers, and enrich their lives–without the long commute.

The regional learning centers are more than 5,000-square-foot-facilities equipped and staffed to provide credit and non-credit opportunities close to home. They offer a wide range of programs, courses and services, including:
- Registration and bookstore services.
- Adult Basic Education classes.

- Preparation for High School Equivalency Diploma (HSED), or General Education Development® (GED) Certificate.
- Corporate Training and Economic Development for area businesses.
- Credit and non-credit computer classes.
- Certificates and seminars.
- Credit level courses–general education, program specific, and pre-program courses.
- Academic advising available onsite for assistance with career selection, applications, and financial aid.
- Certification and re-certification courses like Responsible Beverage Server, CPR, and Food Service Sanitation.
- Assessment testing.
- Access to computers and video equipment.

All of the regional learning centers offer video conference classrooms, large classrooms with SmartBoard Technology, computer labs, free high speed wireless access, student study areas with computers, office/reception areas, and adult skills classrooms.

The regional learning centers cover the gamut of college services for potential and current students. When students want help with choosing a program, assessment, scheduling, registration, financial aid or tuition processing, the regional learning centers are ready and convenient. All staff work closely with the campuses to see that students receive the assistance and services they need.

Business training services for local companies are also hosted at the regional learning centers. Seminars and customized training programs in the facilities bring quality employee education to local businesses. From Customer Service and Conflict Resolution to Excel and Leadership Development, the Regional Learning Centers offer opportunities for learning and continued career development.

Regional Learning Center Locations

Central Region
Vicky Oldham,
Regional Coordinator
418 South Hwy 141
Crivitz, WI 54114
Phone: (715) 854-3338
Toll-Free: (866) 854-3338
Fax: (715) 854-3799
E-mail: central@nwtc.edu

North Region
Sally Miller,
Regional Coordinator
705 Washington Avenue
P.O. Box 226
Niagara, WI 54151
Phone: (715) 251-3790
Toll-Free: (866) 528-5883
Fax: (715) 251-4621
E-mail: north@nwtc.edu

East Region
Sarah Nelson,
Regional Coordinator
133 Commerce Drive
Luxemburg, WI 54217
Phone: (920) 845-5945
Toll-Free: (866) 845-5945
Fax: (920) 845-5948
E-mail: east@nwtc.edu

West Region
Jeannie Jafolla,
Regional Coordinator
111 Thomas Avenue
Shawano, WI 54166
Phone: (715) 524-2418
Toll-Free: (877) 316-1274
Fax: (715) 524-8770
E-mail: west@nwtc.edu

Northwest Region
April Konitzer,
Regional Coordinator
649 E. Jackson Street
Oconto Falls, WI 54154
Phone: (920) 848-6982
Toll-Free: (866) 639-6982
Fax: (920) 848-7773
E-mail: northwest@nwtc.edu

Metro Region
Donna Meves,
Regional Coordinator
NWTC-Green Bay Campus
2740 W. Mason Street
P.O. Box 19042
Green Bay, WI 54307
Phone: (920) 498-6872
Toll-Free: (800) 422-6982,
ext. 6872
Fax: (920) 498-6370
E-mail: metro@nwtc.edu

District Map by Region
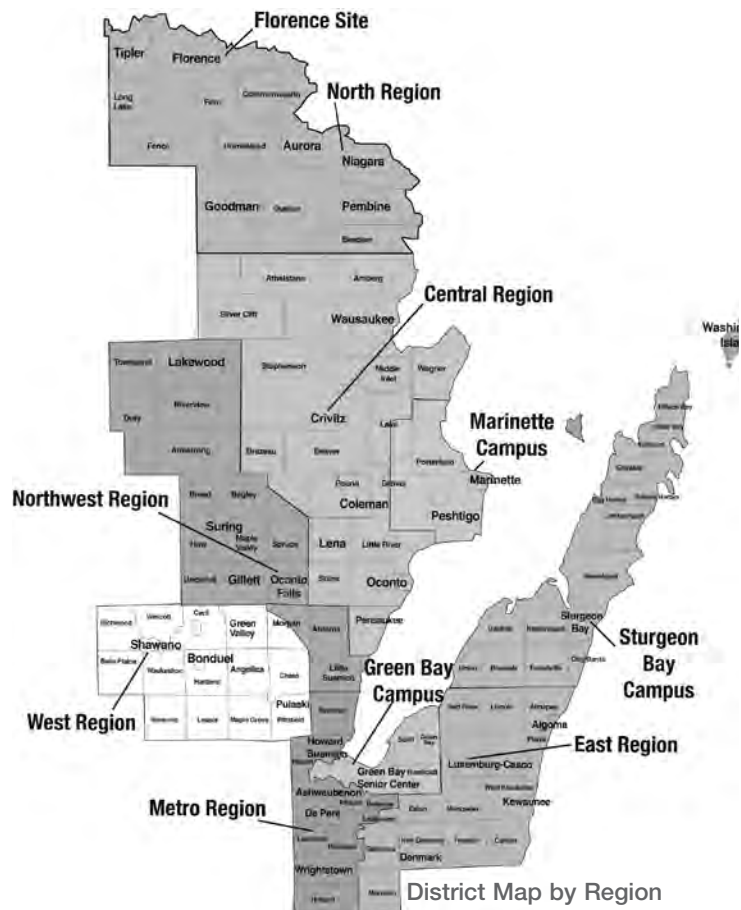
District and Campus Information

District Description

District Boundaries

The Northeast Wisconsin Technical College District is officially described as follows: Brown County less the portions of the Brillion Public School District and the Kaukauna Area School District; Door, Kewaunee, Oconto, Florence, and Marinette Counties; plus the portion of the School District of Denmark in Manitowoc County, and the portion of the School District of West De Pere in Outagamie County; the Gillett School District, the School District of Bonduel, and the Shawano-Gresham School District in Shawano County; and the Pulaski Community School District in Outagamie and Shawano Counties.

This catalog is not to be considered in any way a contractual document between Northeast Wisconsin Technical College and the student. The District administration reserves the right to change curricula, regulations, and course offerings as published in this catalog during the period of any student's attendance. Any changes made will be in accordance with the policies, rules, and regulations established by the Wisconsin Technical College System Board and will be based upon the changing needs of the occupational areas involved.

This catalog was designed for individuals interested in enrolling in post-secondary associate degree and technical diploma programs at Northeast Wisconsin Technical College during the 2011-12 school year. Programs in higher education are offered at three campuses: Green Bay, Marinette, and Sturgeon Bay. In addition, a network of regional learning centers provides learning opportunities throughout the District.

District policy changes after Jan. 1, 2012, could affect portions of this catalog.

Accreditation of Programs

Northeast Wisconsin Technical College is accredited by the Higher Learning Commission and is a member of the North Central Association, **www.ncahlc.org** It is recognized as an institution of higher education by the United States Department of Education. It is recognized as a comprehensive technical college by the Wisconsin Technical College System Board.

The State of Wisconsin empowered the NWTC District Board in 1960 to grant Associate Degrees in Applied Science in two-year programs and Technical Diplomas in one- and two-year programs. Acceptance of courses for transfer credit at the baccalaureate level is at the discretion of the receiving institution.

District Map by County

Applications

Applications to enter an associate degree or technical diploma program are accepted from students who have, at least, entered their senior year in high school. **To apply online, go to www.nwtc.edu and click on Sign Up.** Paper applications are available through local high school counselors, from the Welcome Center at any NWTC campus or center, or by calling Enrollment Services at (888) 385-6982.

NWTC begins accepting applications the Monday after Labor Day. Completed applications are processed on a first-come, first-served basis. When enough applications to fill the next entry date and establish an adequate waiting list have been received, the program is closed and applications are no longer accepted. The closing date varies from program to program and is not entirely predictable. In some cases, a program may not be closed at all.

Note: The following programs have only a five-day application period starting the Monday after Labor Day: Dental Hygienist, Diagnostic Medical Sonography, and Radiography in Green Bay.

Call Enrollment Services at (888) 385-6982 for more specific information.

Application Process

Applying to the program of your choice is easier than ever. You can apply on the web or on paper, and be on your way to a quality education and a great job!

Online:

1. Go to **www.nwtc.edu**
2. Click on **Sign Up.**
3. Follow the instructions. You will need your Social Security Number and credit card.

By Mail or in Person:

You will need:
1. A completed application.
2. A one-time, non-refundable $30 application fee (No cash by mail, please).
3. Your high school transcript or equivalent.
4. Transcripts from any college you may have attended.

Note: You may ask the institutions you attended to send the transcripts directly to NWTC-Program Enrollment.

Mail to NWTC Program Enrollment, P.O. Box 19042, 2740 W. Mason Street, Green Bay, WI 54307-9042 or bring to the Welcome Center at NWTC-Green Bay or any NWTC campus or Regional Learning Center.

NWTC-Program Enrollment will:

1. Send an acknowledgement letter to you within ten working days of receipt of your application.
2. Provide written information to you about the status of your application with instructions on what to do next.

You may contact NWTC-Enrollment Services at any time during the application process at (920) 498-6901 for TTY Access.

Waiting List

NWTC is in compliance with Wisconsin Statute TCS10, which specifically addresses the use of Waiting Lists. When enough applications have been received, processed, and accepted to fill a program for that term, a Waiting List is established.

Applications will continue to be processed and placed on a Waiting List until enough applicants are on a Waiting List to fill that program for the following term. The program will then be "closed" to further applications until the following term.

Admission Questions

For questions regarding admission to an NWTC program, students should contact Enrollment Services for their desired degree or diploma program.

The admission process includes an Academic Skills Assessment (page 11).

Student Classification System

There are three classifications of students at NWTC.
- Program students (associate degree and technical diploma).
- Certificate students (students pursuing one or more short-term certificates).
- Undeclared students (students not yet accepted into an associate degree, technical diploma program, or certificate).

Associate Degree and Technical Diploma Students Must:

- Apply and be admitted to a degree or diploma program.
- Successfully complete all required course work and prerequisites to graduate.
- Have at least a 2.0 (C) cumulative grade point average (GPA) to graduate.
- Fulfill requirements as stated in the Student Handbook.
- Attend a program orientation.
- Register prior to undeclared and certificate students.

Undeclared and Certificate Students May:

- Take available classes that meet their personal objectives and for which they have completed the prerequisites.
- Not have applied for admission to any degree or diploma program.
- Not have been accepted into a degree or diploma program.

New Students

An applicant must be a high school graduate or equivalent to be eligible for admission to all programs. Upon application, Program Enrollment will evaluate all experience, transcripts and assessments to determine that program requirements have been met. All records, including assessment results (Academic Skills Assessment Program Benchmark Scores, pages 12-13) are considered by Program Enrollment when granting acceptance to a degree or diploma program.

Transfer Students

Students transferring to NWTC from another institution of higher education will be considered for admission based on all submitted records. If an applicant is on scholastic suspension at another institution, she/he will be considered for admission on a conditional basis.

Negative Service Indicators

Negative service indicators are holds placed on student records that block activities such as registration. Applications will not be accepted from students who have negative service indicators. Students are welcome to reapply to an open program after the indicators have been satisfied and removed. For more information on indicators, contact the Student Finance Office at (920) 498-6816.

Readmission

If a student's attendance is interrupted for three or more consecutive semesters, the student must reapply and see a counselor before re-enrolling.

An exception is made for students serving in the military reserves or Wisconsin National Guard who have their attendance interrupted due to call to active military service or who are asked to work for the federal government during a national emergency or limited national emergency.

Shared Programs

A shared program is an associate degree or technical diploma offered jointly by two or more technical colleges. NWTC shares several programs, allowing students access to additional program opportunities.

Admission

International, Nonimmigrant Student Admission

The U. S. Department of Justice, Immigration and Naturalization Service (INS) has approved NWTC for acceptance of international, nonimmigrant students.

International students who have not taken the Academic Skills Assessment must have scored well enough on another approved standardized test within three years of applying for admission to an NWTC program. The test must assess reading, writing, and arithmetic skills. Other approved tests are: TOEFL, ACT, ASSET, TABE, Compass, or Accuplacer tests. For more information, contact the NWTC Registrar, (920) 498-6269.

Tuition and Fees

Tuition and fees for a typical class (credit-bearing lecture class delivered in a classroom) are $117.05 per credit in 2010-11, not including books or other supplies. Fees vary depending on type of class (lab, clinical, non-credit, or online) and degree program. Non-resident tuition is an additional $53.00 per credit. See next column for Minnesota and Michigan reciprocity agreements.

An estimate of each semester's program cost for each degree program is online. The Wisconsin Technical College System Board will set fees for 2011-12 after this publication goes to press; for more specific cost information, please visit **my.NWTC** or call (920) 498-5444 or (800) 422-6982, ext. 5444.

Refund Policy

The Wisconsin Technical College System (WTCS) Refund Policy states:
- Drop before the first scheduled meeting of the class–100% refund.
- If at or less than 10% of total class meetings completed at time of drop –80% refund.
- After more than 10% but not more than 20% of total class meetings completed at time of drop–60% refund.
- After more than 20% of total class meetings completed at time of drop –0% refund.

After the first scheduled day of class: Miscellaneous class-related fees (i.e., luncheon, insurance, etc.) are non-refundable.

You may drop a class in several ways: go to **www.nwtc.edu** and click on **my.NWTC**; by phone at (888) 385-6982 ; or in person at the Welcome Center at any NWTC location.

For complete refund information, please visit our web site at **www.nwtc.edu** or call (920) 498-6816 or (888) 385-6982, ext. 6816.

Tuition Reciprocity Agreements
Michigan-Wisconsin Post-High School Wisconsin Technical College System Reciprocity Agreement

Any Wisconsin student who is a resident of the Northeast Wisconsin Technical College District may attend any of the following schools in Michigan: BayDeNoc and Gogebic Community Colleges and educational institutions in the counties of Gogebic, Iron, Dickinson, Menominee, and Delta. The student will pay the standard out-of-district resident tuition rate charged by that institution under this agreement.

Any Michigan student who is a resident of BayDeNoc and Gogebic Community College Districts in the counties of Gogebic, Iron, Dickinson, Menominee, and Delta may attend NWTC. Students admitted under this agreement will pay an additional nominal fee.

In 2010-2011 this fee was $5.00 per credit. Students from both states shall be charged the same standard out-of-District, in-state, resident tuition rate. The tuition rate is established annually by mutual agreement of representatives of each state and the educational districts involved.

Minnesota-Wisconsin Interstate Compact

A Wisconsin resident enrolled in a full-time program in a Minnesota Vocational-Technical Institute is considered a Minnesota resident for tuition purposes. A Minnesota resident enrolled in a full-time program at NWTC is considered a Wisconsin resident for tuition purposes.

Tobacco Use Policy

Smoking and the use of tobacco products are prohibited in all NWTC academic and administrative buildings. Smoking and the use of tobacco products on all NWTC campuses and regional learning centers are limited to "Designated Smoking/Tobacco-Use Areas." The NWTC District Board instituted this policy based on a concern for the health of all students, faculty, and staff members at the College.

Retraining Guarantee

NWTC offers free retraining for employed graduates whose employer certifies that they lack job competencies specified in their degree or diploma program.

Former students are eligible if they meet three requirements.
1. The NWTC student has graduated from a one-year or two-year technical diploma or associate degree program.
2. The job concerned is the student's first job after graduating.
3. Within 90 days of hiring the graduate, the employer certifies in writing that the employee lacks entry-level job skills and specifies the areas in which the graduate is deficient.

When these conditions are met, an NWTC team will be assembled to help the student with retraining courses and services. Participants may take up to six credits in their occupational program, and all program and material fees will be covered by the College.

Students are fully responsible for tuition and fees. To avoid charges, late fees, and collection costs, students must pay class fees by the due date, or must drop any classes before the start of the semester through Enrollment Services. Students will not be automatically dropped from classes by simply not attending.

NWTC is committed to assisting all students in meeting their service and learning goals. NWTC uses an Academic Skills Assessment to determine entry-level program readiness.

All students entering an associate degree or technical diploma program must complete an Academic Skills Assessment as part of their admissions process except:

Applicants who have a degree or diploma from an accredited four-year college or university or an associate degree from a Wisconsin Technical College.
OR
Applicants who have earned 15 college credits within the past three years with a grade of "C" or better in each course. (Not applicable to associate degree programs listed in the next column.)
OR
Applicants who have scored well enough on an approved standardized test within three years of applying to an NWTC program. The assessment must include reading, writing, math, and algebra (if applicable) skill components.

Approved standardized tests are:
- Accuplacer Skills Assessment
- ACT from American College Testing Service
- Asset
- Compass
- TABE

Students who do not have a high school diploma, or General Education Development® (GED) Certificate, or HSED Certificate will also need to attain certain minimum test scores in order to receive federal financial aid.

Academic Skills Assessments

The Academic Skills Assessment assesses the candidate's skill level in the areas of reading comprehension, sentence skills, math, and algebra, identifying the content areas that may need skill improvement to ensure the candidate's program success.

The Academic Skills Assessments are taken on a computer. Assessment scores are provided immediately upon completion of the assessment.

Program Benchmarks and Program Admission

The Program Benchmark Scores (pages 12-13) list active programs and their Accuplacer benchmark scores. Several programs require program benchmark scores or minimum composite ACT scores be met either prior to submitting a program application or prior to program entry.

The following programs require assessment scores be met **prior to submitting an application.**
- Associate Degree Nursing
- Diagnostic Medical Sonography
- Practical Nursing
- Radiography

The following programs require assessment scores be met **prior to program entry.**
- Clinical Lab Technician
- Dental Assistant
- Dental Hygiene
- Medical Assistant
- Paralegal
- Physical Therapist Assistant
- Respiratory Therapist
- Surgical Technologist

Detailed information regarding application and admission requirements for these programs can be found on the respective program description pages of this catalog (pages 32-221).

The remaining NWTC programs do not require that program benchmarks be met in order to be accepted into an NWTC program. However, candidates are strongly encouraged to improve their skills and meet the program benchmarks prior to program entry. In some cases, upgrading of skills can be done simultaneously with program coursework.

Individuals not meeting the benchmarks listed next to their program of choice (pages 12-13, Academic Skills Assessment/Program Benchmark Scores) can still be admitted into the program of their choice if:
1) The learner meets the "College Minimum Standards" as follows: Math 34; Reading Comprehension 55; Language 60.
2) The learner works to upgrade the content area identified as needing improvement. For students who have completed high school, skill improvement may be done at NWTC's on-campus Academic Skills Lab, or at any of NWTC's Campuses and regional learning centers.

Assessment Center

_____ Important! _____
Picture identification and a $20.00 fee are required to take all Academic Skills Assessments.

Location and Hours
The Academic Skills Assessments are administered at the NWTC-Green Bay Campus Assessment Center, Room SC 365, on a walk-in basis during the following hours:
Monday–Thursday
    8:00 a.m.–7:00 p.m.
    Please arrive by 4:00 p.m.
Friday
    8:00 a.m.–5:00 p.m.
    Please arrive by 2:00 p.m.
Saturday
    8:00 a.m.–11:00 a.m.
    Please arrive by 8:00 a.m.
Note: Summer hours may vary.

The Academic Skills Assessments are Also Given at the Following Locations:

Sturgeon Bay–Serving Northern Door, Sturgeon Bay, and Washington Island. Call (920) 746-4900; toll-free (800) 422-6982, ext. 4900.

Marinette–Serving Marinette and Peshtigo. Call (715) 735-9361; toll-free (800) 422-6982, ext. 9361.

Central Region–Serving Coleman, Crivitz, Lena, Oconto, and Wausaukee. Call (715) 854-3338; toll-free (866) 854-3338.

East Region–Serving Algoma, Casco, Denmark, Dyckesville, Kewaunee, and Luxemburg. Call (920) 845-5945; toll-free (866) 845-5945.

North Region–Serving Aurora, Florence, Goodman, Niagara, Pembine, and Tipler. Call (715) 521-3790; toll-free (866) 528-5883.

Northwest Region–Serving Gillett, Lakewood, Townsend, Oconto Falls, and Suring. Call (920) 848-6982; toll-free (866) 639-6982.

West Region–Serving Shawano, Bonduel, and Pulaski. Call (715) 524-2418; toll-free (877) 316-1274.

Please contact the above sites to inquire about their specific schedules.

Any questions regarding the Academic Skills Assessment process should be directed to Sally Langan, NWTC-Green Bay Assessment Center, at (920) 498-5688, (800) 422-NWTC, ext. 5688, or e-mail: sally.langan@nwtc.edu

Academic Skills Assessment
Program Benchmark Scores

Listed below are the benchmark test scores for each NWTC program. (*Please note that scores for shared programs are listed on individual catalog pages.*) The benchmarks represent the entry skill level considered necessary for a student to be successful in that program. Students not meeting the benchmark grade equivalents in the program of their choice have the opportunity to improve their skills by attending NWTC's on-campus Academic Skills Labs in Green Bay, the Marinette and Sturgeon Bay campuses or any one of the regional learning centers. Instruction is individualized, self-paced, and offered at no cost to individuals who have a high school diploma, a GED® Certificate or HSED Certificate.

NEW Summer 2012!

NWTC wants all learners to have a successful academic experience as they work to obtain their credential. To maximize the opportunity for success of all students, effective summer term 2012, NWTC will implement prerequisite levels of proficiency in reading, writing, and math for general studies courses. Proficiency will be determined for each student by completing the College's placement assessment (Accuplacer). For students not meeting the proficiency requirements, refresher and skill development opportunities will be immediately available. Please note that existing program benchmarks will remain in effect through spring term 2012.

Program Code	Program Name	Arithmetic	Reading Comprehension	Sentence Skills	Algebra
101011	Accounting	66	75	87	N/A
311011	Accounting Assistant	66	75	87	N/A
101066	Administrative Professional	41	66	76	N/A
106237	Applied Engineering Technology	101	79	89	CM-50
106141	Architectural Technology	90	88	90	CM-50
324051	Auto Collision Repair and Refinishing Technician	55	68	73	N/A
104051	Auto Collision Repair and Refinishing Technology	72	75	84	N/A
106641	Automation Engineering Technology	101	79	89	CM-50
324042	Automotive Technician	41	75	73	N/A
106023	Automotive Technology	41	75	73	N/A
101023	Business Management	34	55	60	N/A
101097	Casino Management	34	55	60	N/A
305105	Certified Medication Assistant	34	55	60	N/A
106071	Civil Engineering Technology	101	79	84	CM-63
105131	Clinical Laboratory Technician	101	90	94	60
101543	Computer Support Specialist-IT	66	95	89	86
311546	Computer Support Technician-IT	66	95	89	86
101145	Credit Business Management	34	68	60	N/A
105042	Criminal Justice-Corrections	34	55	60	N/A
105041	Criminal Justice-Law Enforcement	34	55	60	N/A
305041	Criminal Justice-Law Enforcement Academy	N/A	N/A	N/A	N/A
315081	Dental Assistant	66	75	84	N/A
105081	Dental Hygienist	80	90	90	60
105262	Diagnostic Medical Sonography	70	90	84	60
324121	Diesel andHeavy Equipment Technician	72	75	84	N/A
104121	Diesel Equipment Technology	72	75	84	N/A
102065	Digital Media Technology	51	75	84	N/A
103071	Early Childhood Education	55	75	73	N/A
106621	Electrical Engineering Technology	101	79	89	CM-63
314132	Electrical Power Distribution	66	86	84	54
314131	Electricity	72	75	84	46
106201	Electro-Mechanical Technology	101	79	89	CM-50
106051	Electronics (with optional Biomedical specialty)	101	79	89	CM-50
305313	Emergency Medical Technician-Basic	N/A	55	N/A	N/A
305316	Emergency Medical Technician-Intermediate Technician	N/A	55	N/A	N/A
104813	Energy Management Technology	101	79	89	CM-50
103202	Enology	34	55	60	N/A
300901	Farm Business and Production Management	34	55	60	N/A

Academic Skills Assessment
Program Benchmark Scores

Program Code	Program Name	Arithmetic	Reading Comprehension	Sentence Skills	Algebra
101144	Financial Institutions Management	34	68	60	N/A
105033	Fire Protection Engineering Technology	72	75	84	N/A
314692	Gas Utility Construction and Service	66	86	84	54
108001	General Studies Transfer (UW-Green Bay or UW-Oshkosh)	55	64	74	N/A
105441	Gerontology	66	78	78	N/A
101601	Health Care Business Services	72	75	84	N/A
105301	Health Information Technology	72	75	84	N/A
106011	Heating, Ventilation, Air Conditioning and Refrigeration Technology	79	79	78	55
101092	Hotel and Restaurant Management	34	55	60	N/A
108251	Individualized Technical Studies	34	55	60	N/A
104995	Individualized Technical Studies-Journeyworker	34	55	60	N/A
314622	Industrial Mechanic	72	75	84	N/A
105222	Instructional Assistant	55	75	73	N/A
100014	Landscape Horticulture	72	66	89	N/A
101961	Leadership Development	34	55	60	N/A
324441	Machine Tool-CNC Technician	66	75	60	N/A
314201	Machine Tool Operation	66	75	60	N/A
324205	Machine Tool Technics (Tool and Die Making)	69	75	60	N/A
106233	Manufacturing Engineering Technology	101	71	76	CM-63
314481	Marine Construction (Algebra for Marine Electricity students only)	72	75	84	46
104481	Marine Engineering Technology	96	75	84	CM-63
101043	Marketing	34	55	60	N/A
101117	Marketing and Graphic Communications	51	75	84	N/A
106061	Mechanical Design Technology	96	75	84	CM-50
315091	Medical Assistant	55	64	74	N/A
101502	Network Specialist-IT	66	95	89	86
105431	Nursing-Associate Degree	80	90	95	N/A
305431	Nursing Assistant	N/A	55	N/A	N/A
311061	Office Professional	41	66	76	N/A
101101	Paralegal	66	75	95	N/A
305312	Paramedic-Emergency Medical Technician	N/A	N/A	N/A	N/A
105241	Physical Therapist Assistant	90	90	94	60
304281	Power Engineer and Boiler Operator	34	55	60	N/A
315431	Practical Nursing	79	78	90	N/A
312041	Print Technology	51	75	84	N/A
106142	Prototype and Design	70	79	76	68
105261	Radiography Associate Degree	90	90	94	65
105151	Respiratory Therapist	90	90	94	60
104824	Solar Energy Technology	101	79	89	CM-63
101821	Supply Chain Management	34	55	60	N/A
315121	Surgical Technologist	34	55	74	N/A
104681	Utilities Engineering Technology	101	79	89	CM-63
103201	Viticulture	34	55	60	N/A
101522	Web Development	66	95	89	86
314421	Welding	72	75	84	N/A
314102	Wood Tech	72	71	73	N/A

Credit for Prior Learning

Thank you for considering enrollment at NWTC. Each year students who may have acquired some of the skills, knowledge and competencies needed for the courses or programs in which they are interested enter the College. Students are encouraged to review the following policies for awarding credit for prior learning to determine if any would be beneficial.

Policy on Credit for Prior Learning

The College recognizes that skills and knowledge may be gained in ways other than through formal classroom or laboratory learning. Students must be officially admitted in a degree, diploma, or certificate program before receiving credit for prior learning. A minimum of 25 percent of the technical or occupational course requirements must be taken through NWTC.

1. Credit by Secondary School Written Agreement

Students may request credit for prior learning through written agreements between NWTC and accredited high schools in the District. NWTC also honors credit for prior learning agreements between secondary schools and other technical colleges in Wisconsin. Go to **www.nwtc.edu** and type **High School Transfers** in the search box to view the NWTC high school transfer agreements. Students may be awarded credit under the following conditions:

- The student presents appropriate documentation of successful completion of the course(s); and
- The student achieved at least a 3.0 (B) in the course(s).

2. Credit for Youth Apprenticeship Program

A student who has completed a state approved youth apprenticeship program may be awarded credit for a specific technical college course(s) under the following conditions:

- The student presents appropriate documentation of successful completion of the youth apprenticeship program; and
- The student achieved at least a 3.0 in youth apprenticeship course(s).

3. Credit for Prior Learning for Journey Level Apprenticeship Training

Apprentices who have completed their training and obtained journey level status are eligible for 39 credits for prior learning toward an associate degree in Individualized Technical Studies. For information, call the Apprentice Manager at (920) 498-5704 or (800) 422-NWTC, ext. 5704.

4. Credit by NWTC Exam

A student may be granted credit for a specific technical college course(s) by demonstrating competency based on methods determined by the appropriate academic team. The assessment may consist of a performance exam, practical exam, or a combination of methods chosen by the academic team.*

This procedure does not apply to standards, qualifications or license required by an agency outside the college.

* For complete details, go to **www.nwtc.edu** and type **Student Handbook** in the search box.

5. Credit by National Exam

A student may be granted credit for specific technical college course(s) by receiving a minimally acceptable score on an examination with nationally recognized standards. National exams include, but are not limited to, the College Board Advanced Placement (AP) exams, the College-Level Examination Program (CLEP), and nationally recognized exams in specific occupational areas.

- In granting credit, the College considers the achievement of an acceptable score on the examination and the applicability of the knowledge, skills, and competencies measured by the examination as it relates to the educational program in which the student is enrolled.
- For AP Exams, a student must receive a score of three or above to be eligible for the awarding of credit for the completion of the appropriate college course(s).

6. Credit for Work or Life Experience

Students may be granted credit for previous work, life, and military experiences that are comparable in content and level with specific NWTC courses. Portfolio documentation will be required; assistance in developing a portfolio is available through the Green Bay campus Communication Skills Lab or a community Basic Skills Lab. Forms are available in each of these division offices: Business and Information Technology, Health Sciences, Trades & Engineering Technologies, Public Safety, and General Studies.

7. Transfer of Credit From Other Colleges or Universities

To transfer credits from other colleges or universities to NWTC, students must be accepted into an associate degree, technical diploma or certificate program. Students must provide the NWTC Program Enrollment Specialist with their official transcripts and records of educational assessments. The NWTC Student Records Office reviews all requests for transfer of credit. Student Records may grant credit if the course content being transferred is equivalent, and 2.0 (C) or better grades (with some exceptions) were received.

Appeal Procedure

Decisions involving the granting of prior learning credit may be appealed. All appeals must be in writing and addressed to the Vice President of Student Services at the Green Bay campus.

For complete program information, go to: www.nwtc.edu

Is a Bachelor's Degree the Next Step?

Start Your Four-Year Degree at NWTC!

The credits you earn at NWTC are valuable–many four-year colleges and universities accept credits from NWTC toward a bachelor's degree.

Northeast Wisconsin Technical College believes strongly in providing options for students to continue their education with seamless pathways to a baccalaureate degree. The college has developed transfer opportunities with four-year private and public universities and colleges to help NWTC students earn a bachelor's degree.

To determine how courses and programs will transfer, students are encouraged to contact the four-year college or university to which they are interested in transferring. For an up-to-date list of transfer opportunities go to **www.nwtc.edu** and type **Articulation** in the search box.

To find out how your credits will transfer to a public college or university within Wisconsin, you can utilize the Transfer Information System (TIS), which includes the 26 campuses in the University of Wisconsin System and the 16 districts within the Wisconsin Technical College System (WTCS). Go to **http://www.uwsa.edu/tis/will/index.shtml**

General Education Transfer

Every college requires students to satisfy a set of general requirements (in addition to requirements in their major) in order to graduate. General Education requirements (also known as Gen Ed, General Degree Requirements, GE and GER) may include basic student competency or proficiency requirements, such as English composition, mathematics, and foreign language. They also include distribution or breadth requirements in the arts, humanities, natural sciences and social sciences as a foundation for specialization.

Different colleges have different general education requirements. The Gen Ed column on the TIS Transfer Report tells you how the transfer course may be used to satisfy General Education requirements at the "Transfer To" campus. You can also use the General Education Wizard section on TIS to find out what courses at NWTC transfer for General Education credit at another UW or WTCS campus. Visit **http://www.uwsa.edu/tis/will/index.shtml**

Your NWTC Credits Can Give You a Head Start on a Bachelor's Degree in the UW System

Students who wish to continue their education in the University of Wisconsin System may be eligible to transfer credits toward a bachelor's degree in several ways.
- The one-year General Studies Transfer Certificate can help you qualify for sophomore status at UW-Green Bay or UW-Oshkosh.
- You may be able to transfer up to 21 credits of General Education courses.
- You may receive credit for certain scores on national standardized tests (e.g., College Level Examination Program) or tests developed by the UW institution.
- Some UW System schools provide graduates of certain NWTC programs with credit toward related bachelor's degree programs.
- Students may have individual courses evaluated for transferability by UW System staff.

Any questions regarding NWTC Academic Transfer and Articulation Agreements should be directed to Anne Kamps, NWTC Dean of Learning Support Services and Program Development at (920) 498-6367, (800) 422-NWTC, ext. 6367, or e-mail: **anne.kamps@nwtc.edu**

Financial Aid

Objectives

Financial aid helps students reach their educational goals by eliminating financial barriers and providing financial assistance in alignment with the vision of NWTC.

Financial aid is available to students in financial need through loans, grants, and work study employment. Enrollment Services provides information on financial aid and other types of financial assistance, such as scholarships.

Students should apply for financial aid in the January before they will start school, or as soon after January as possible. They may apply for aid before they are accepted into a degree or diploma program. However, financial aid award notification is not sent to students until they have been accepted into a program.

Eligibility

To be eligible for federal or state aid programs, students must:
- Have financial need.
- Be accepted into an eligible program.
- Be a U.S. citizen or an eligible non-citizen (permanent resident).
- Be a Wisconsin resident for state funds.
- Be registered with the Selective Service, if required to do so.
- Not be in default on a student loan nor owe a repayment on a student grant.
- Not be convicted of a drug offense while receiving student aid.
- Maintain satisfactory progress, as defined by the College.

For more information, go to **www.WASFAA.net** <click> **Students/Parents** <click> **Private Loan Info**

Enrollment Status is Based on the Number of Credits Being Taken

Full-time = 12 or more credits
3/4 time = 9-11 credits
Half-time = 6-8 credits

Application Procedure

When students apply for financial aid, the earnings and savings of the student and his or her family are used to determine financial need. The application process includes several steps.

A. New First-Year Students

1. Apply for a PIN number at **www.pin.ed.gov** if student does not already have one.
2. Apply online at **www.fafsa.gov**
3. Students will receive a Student Aid Report (SAR) from the Federal Processing Center within one week. Be sure that the information is correct. If corrections need to be made, inform the NWTC Financial Aid Office.
4. Provide all additional information the NWTC Financial Aid Office requests.
5. Based on the financial need and number of credits the student is taking, the NWTC Financial Aid Office will determine the amount of aid in grants, work study and loans the student is eligible to receive. An Award Notification will be sent to each student with this information when the student is accepted into a program.
6. Monitor your financial aid through **my.NWTC** at **www.nwtc.edu**

B. Continuing and Transfer Students

Complete application online at **www.fafsa.gov** or follow steps 1-6 in the previous column. Students must follow this procedure for each academic school year. The Financial Aid Application (FAFSA) is available in January for the next school year.

Types of Financial Aid

Students who complete the FAFSA are considered for a variety of programs:

Federal Pell Grant

The Federal Pell Grant program gives a base of aid to which all other types of aid are added. Pell Grants are based on financial need and are pro-rated according to the student's enrollment status.

Federal Work-Study (FWS)

This program provides employment to students attending school at least half-time who have financial need. Work-study students are paid $8.75 per hour. The typical work-study job is 10 to 15 hours per week. Most jobs are available on-campus, but some off-campus positions may be available.

Federal Supplemental Educational Opportunity Grant (FSEOG)

This grant is for students who have a large financial need. The student must be eligible for the Federal Pell Grant Program in order to receive a FSEOG.

Wisconsin Higher Education Grant (WHEG)

To receive a WHEG, the student must be a Wisconsin resident attending a Wisconsin college at least half-time.

Talent Incentive Program (TIP)

The Talent Incentive Program grant is run by the Wisconsin Higher Educational Aids Board. To be eligible, the student must be a resident of Wisconsin, be enrolled at least half-time as a first-year student, and show financial need in addition to other selection criteria.

Wisconsin Minority Grant

The Minority Grant program is run by the Wisconsin Higher Educational Aids Board. To be eligible, the student must be a Wisconsin resident, be enrolled at least half-time, and demonstrate financial need in addition to other selection criteria.

Financial Aid

Bureau of Indian Affairs (BIA) Grant

Native American students (with at least 1/4 Indian lineage) enrolled full time may receive aid from the Bureau of Indian Affairs. To be considered for this grant, students must contact their Tribal Education Office for an Indian Scholarship Application.

Wisconsin Indian Assistance Grant (WIAG)

This grant is for Native American students who are Wisconsin residents attending a Wisconsin college. To be considered for this grant, students must complete an Indian Scholarship Application with their Tribal Education Office.

Wisconsin Deaf/Blind Handicapped

Visually challenged or hearing impaired Wisconsin residents may qualify for a Grant for Handicapped Persons. These grants are run by the Wisconsin Higher Educational Aids Board and are based on financial need. To be considered for this grant, the student must contact the Wisconsin Higher Educational Aids Board in Madison, WI, at (608) 266-0888.

Direct Stafford Loans

Direct Stafford Loans, from the William D. Ford Federal Direct Loan (Direct Loan) Program, are low-interest loans for eligible students to help cover the cost of higher education at a four-year college or university, community college, or trade, career, or technical school. Eligible students borrow directly from the U.S. Department of Education (the Department) at participating schools.

Direct Stafford Loans include the following types of loans:

- **Direct Subsidized Loans—**Direct Subsidized Loans are for students with financial need. Your school will review the results of your Free Application for Federal Student Aid (FAFSASM) and determine the amount you can borrow. You are not charged interest while you're in school at least half-time and during grace periods and deferment periods.

- **Direct Unsubsidized Loans—** You are not required to demonstrate financial need to receive a Direct Unsubsidized Loan. Like subsidized loans, your school will determine the amount you can borrow. Interest accrues (accumulates) on an unsubsidized loan from the time it's first paid out. You can pay the interest while you are in school and during grace periods and deferment or forbearance periods, or you can allow it to accrue and be capitalized (that is, added to the principal amount of your loan). If you choose not to pay the interest as it accrues, this will increase the total amount you have to repay because you will be charged interest on a higher principal amount.

Federal Direct Parent Loans for Undergraduate Students (PLUS)

This program makes loans available to parents of dependent students. For details, go to **www.nwtc.edu** and type **Loan** in the search box.

Veteran Information

Veteran Services is located in Room SC240 in the Student Center on the Green Bay campus. If you wish to use your Federal Veteran Educational Benefits, you must be accepted into a program, complete the required forms each semester and submit the necessary paperwork for certification. In an effort to provide sufficient time to establish an award, you should apply for veteran benefits at the same time you apply for admission to your program.

Assistance under federal veteran programs include:
- Chapter 30, Montgomery GI Bill (Active-Duty)
- Chapter 31, Disabled Veteran's Vocational Rehabilitation Program
- Chapter 33, Post 911 GI Bill
- Chapter 35, Survivors'/Dependents' Educational Assistance Program
- Chapter 1606, Selected Reserve GI Bill (Reserve and Guard)
- Chapter 1607, Reserve Education Assistant Program

Assistance under Wisconsin Veteran Education programs include:
- National Guard Tuition Grant
- Veterans Education Grant
- Retraining Grant
- WI GI Bill

For information on eligibility requirements for state benefits, contact your County Veteran Services Officer.

Veterans who wish to continue to receive benefits must maintain satisfactory academic progress (GPA 2.0) each semester. Students must notify Enrollment Services of drops or withdrawals to prevent potential overpayments.

Further information on Veteran Benefits can be obtained at the Welcome Center in the Student Center on the Green Bay campus or online at **www.gibill.va.gov** for Federal Benefits. For State Benefits, go to: **http://dva.state.wi.us**

For questions about Veteran educational benefits at NWTC, contact NWTC's Veteran Coordinator at (920) 498-5444 or (800) 422-6982.

Scholarship Information

Northeast Wisconsin Technical College
Educational Foundation Inc.

Why Apply for NWTC Scholarships?

Whether you are a high school student or a new or continuing student at Northeast Wisconsin Technical College, full- or part-time, you can reduce your financial obligations by applying for scholarships available through the NWTC Foundation or other organizations.

- Scholarships provide an excellent way to fund tuition, books and other course-related expenses.
- Scholarships can replace personal payments or financial aid payments which, could result in a refund of such payments for your living expenses.
- Scholarships are awarded to students who demonstrate initiative, the desire and potential to succeed, academic progress, or financial need.
- The NWTC Foundation awards over $195,000 in scholarships each year to students taking classes through NWTC.

When to Apply for NWTC Scholarships

- **Apply March 1 to May 1 for Fall Semester**
  Awards issued first week of August (start of fall semester).
- **Apply Oct. 1 to Nov. 15 for Spring Semester**
  Awards issued mid-January (start of spring semester).
- Applications are accepted and processed outside of these times on a referral basis only.

How to Apply

There are over 300 scholarships available to current and future NWTC students through the NWTC Foundation.

- All you need to do is complete the NWTC Foundation Scholarship Application form. For details, go to **www.nwtc.edu** and type **Scholarship** in the search box.
- Your application will be submitted to the scholarship review committees of all the scholarships that best match your qualifications.

Local, Regional and National Organizations

Many other organizations also provide scholarship funding to NWTC students. NWTC students have received over $200,000 from such organizations. Each organization has its own program with separate applications and deadlines. As a service to our students, this information is posted on the NWTC website. For details, go to **www.nwtc.edu** and type **Scholarship** in the search box.

We wish you the best in your search for educational funding. Remember, we are here to assist you. Please call (920) 498-6914 or (800) 422-NWTC, ext. 6914, if you have additional questions.

Northeast Wisconsin Technical College Educational Foundation

The Northeast Wisconsin Technical College Educational Foundation is a public, non-profit corporation that was established to assist in supporting the mission of the College. The Foundation acts as an agent through which contributions are managed and distributed. Contributions to the Foundation are applied toward student scholarships, faculty development, equipment acquisition, and program enhancement.

Donate Online

Go to **www.nwtc.edu** and type **Scholarship** in the search box.

NWTC Alumni–Get Involved!

Alumni who are interested in staying involved with the College, meeting other graduates, and contributing to the education of other students should contact the NWTC College Advancement/ Foundation office, (920) 498-5541, or (800) 422-NWTC, ext. 5541.

Alumni who change their addresses or who need assistance with job searches should call the College's Career Services Office at (920) 498-5528, or (800) 422-NWTC, ext. 5528. (For more information about the Career Services Office, see page 22.)

What is Youth Options?

Youth Options is a program that opens the door to greater learning opportunities for qualified high school juniors and seniors. Students who are considering a technical career, or wishing to begin college early, will be interested in Youth Options. The program allows students to take post-secondary (college-level) courses at NWTC.

The student does not have to pay for a post-secondary course if the high school board determines the course is not comparable to a course offered by the high school. If approved by the high school board, the student will receive both high school and post-secondary credit for a successfully completed course.

Who is Eligible for Youth Options?

The student who has completed the 10th grade; is in good academic standing; does not have a record of disciplinary problems, as determined by the high school; and does not meet the statutory definition of a "child-at-risk" may participate in the Youth Options Program.

How Do I Start?

Application forms are available from your high school's counseling office or from NWTC.
- The student must obtain his or her parent's or guardian's signature on the application.
- The student will then meet with the high school counselor to discuss how Youth Options classes will fit into the student's high school schedule.
- With the assistance of the high school counselor, the student makes course selection(s) and submits those choices to the student's school board by **March 1** for the fall semester or **Oct. 1** for the spring semester.
- The signed forms with approved classes **MUST** be submitted to NWTC by the following dates: **May 15** for the fall semester or **Nov. 15** for the spring semester.
- After the submission deadline, the student will be contacted by NWTC. Youth Options participants are required to meet with an NWTC representative prior to registration for the approved course(s).
- Courses offered during the summer session are not eligible for the Youth Options Program.

What Courses are Available to a Youth Options Student?

A student will find many choices available. Courses are available in person, through Interactive Television (ITV), Correspondence Courses, and over the Internet. Any associate degree or technical diploma course may be taken, as long as all prerequisite and corequisite requirements are met.

The Youth Options Program is offered through the Green Bay, Marinette, and Sturgeon Bay campuses and all NWTC regional learning centers.

For more information, call the Green Bay campus at (888) 385-6982.

Ways of Learning

NWTC provides ways of taking courses at times and locations which go beyond the traditional college day. They are especially valuable for working adults who need to fit college into busy work and family schedules, but they can help anyone make education possible. For details students may check NWTC's website or consult an NWTC Academic Advisor at (888) 385-6982.

Accelerated Learning

Accelerated courses use special instructional techniques chosen for their ability to help students learn and retain large amounts of information. Students do much of their learning on their own, often on the job, so that required classroom time is shortened. Most courses will require about one-half the amount of in-class time compared to traditional courses.

Accelerated courses require highly motivated students who are already on the job. They will need to draw from their work experience to fully participate in the wide variety of learning experiences and projects. Accelerated courses require reading and an assignment to be completed before the first class. Assignment packets are mailed to students prior to their first class.

Self-Paced Learning

Some computer, math, and accounting courses are offered for credit in the self-paced format.

Self-paced students follow a course outline on their own, working when and where it is convenient. When they need assistance, study space or assessments, they can come to specialized labs held on the Green Bay campus and most other campuses and regional learning centers. During self-paced lab hours, instructors are available to work with students one-on-one.

Self-paced classes are best for learners who are self-disciplined and work well without supervision. Shift workers, parents, individuals who have busy or changeable schedules, and those with transportation issues may find that self-paced courses fit their needs.

Note: Many Basic Education courses are also self-paced. Please see the Basic Education section of this catalog for details.

Weekend College

Weekend College is an alternative, non-traditional way to pursue educational objectives at NWTC. Courses are offered on the weekend (Friday night and/or Saturday) and meet one to four weekends per month. Classes usually meet for four to eight hours.

Credit and non-credit courses are available. Most of the credit courses "ladder" into a specific certificate, technical diploma, or associate degree program.

For details, go to **www.nwtc.edu** and click on **Ways of Learning** or call toll-free (888) 385-6982 or (920) 498-5444.

Individualized Technical Studies

Rapid changes in technology and work processes have created a growing demand for employees with enhanced skills that cut across traditional occupational categories. This versatile associate degree complements industry needs, enabling students to combine the skills taught in two or more existing NWTC programs. Each degree is designed in cooperation with an occupational mentor from the target industry and an academic advisor from NWTC. As a result, students earn an associate degree tailored to their specific employment needs. Explore the possibility of Individualized Technical Studies in areas such as: Childcare Administration, Entrepreneurship, and other exciting opportunities.

For details, go to **www.nwtc.edu** and click on **Ways of Learning** or call toll-free (888) 385-6982 or (920) 498-5444.

Online Learning

Online learning is designed with the working adult in mind, giving learners another way to pursue their education and realize their dreams without having to travel hundreds of miles. Online classes offer learning from a wide range of program areas without attending formal classes and allows the learner to complete classes from a distance with the guidance of our highly qualified instructors.

NWTC offers online classes any time and any where students have access to the Internet, in the District, out-of-state, at the library or at home, 24 hours a day, seven days a week. For details, go to **www.nwtc.edu** and click on **Ways of Learning** or call toll-free (800) 422-NWTC, ext. 5503 or (920) 498-5503.

Blended Learning

Blended learning requires both online learning and in-person meetings. In-person meeting information (locations/dates/times) can be found at **my.NWTC.** For details, go to **www.nwtc.edu** and click on **Ways of Learning** or call toll-free (800) 422-NWTC, ext. 5503 or (920) 498-5503.

Correspondence Courses (TCA)

Students learn at home and earn college credit through video/print-based courses. DVDs and VHS tapes are available for checkout at all NWTC campus libraries and public libraries located throughout the area. After registering, students may begin their courses at the semester start date or any time thereafter allowing increased entry and exit flexibility for learners. DVDs and VHS tapes may also be mailed by calling the NWTC Green Bay Library.

The following video/print-based classes are available:

Abnormal Psychology
Business-Intro
College Mathematics
Communication-Oral/Interpersonal
Customer Service Management
Developmental Psychology
Economics
English Composition 1
English Composition 2
Entrepreneurship
Finance-Personal
Intro to Psychology
Intro to Sociology
Law-Business
Marketing Principles
Math with Business Applications
Medical Terminology
Nutrition Pathways
Race Ethnic & Diversity
Selling Principles
Speech
Supervision
Technical Reporting

For information, call Sherry Olive at (920) 498-5571, or toll-free, (800) 422-NWTC, ext. 5571.

Interactive Television (ITV) and Video Conference (VC)

Live Interactive Television (ITV) and live Video Conference (VC) enable learners in distant communities to participate in classes being taught elsewhere. Learners can receive courses and credentials in a multitude of areas including banking, marketing, law enforcement, safety, medical terminology, leadership skills, and communications.

Technology allows enrollments at multiple sites to be combined, increasing opportunities and access for learners wishing to pursue degrees, diplomas, certificates, and personal enrichment courses. ITV and VC make courses more convenient for students, because they can considerably reduce commuting time as well as increase learning opportunities.

Dedicated connections to NWTC Regional Learning Centers create greater access and flexibility for learners. The College can also reach area high schools' sites through the TRITON, ShoreNet, and KSCADE Distance Learning networks, which cover all nine counties in the NWTC District. These networks enable NWTC to provide transcribed and advanced standing courses to high school juniors and seniors. Adult continuing education courses at distant sites in the evenings and services to business and industry are readily available through these technologies. NWTC can also connect with all other Wisconsin Technical Colleges and other K-12 schools.

Student Services

The Division of Student Services provides a broad range of programs and services to help students achieve their academic and career goals and to enhance their personal, intellectual, and social development.

Services include:
- Academic Advising
- Admissions
- Assessment
- Career Counseling
- Displaced Homemaker
- Non-Traditional Occupation Services
- Personal Counseling
- Financial Aid
- Job Search Strategies
- Minority Student Assistance
- New Student Orientation
- Recruitment
- Referral Services
- Registration
- Single Parents
- Special Accomodations
- Student Employment Assistance
- Student Life
- Support Services/Tutoring/Accomodations
- Workforce Investment Act (WIA) Services

For more information, go to www.nwtc.edu or call (920) 498-5444 or toll-free (888) 385-6982.

Career Services

The Career Services office on the Green Bay campus and the career centers on the Marinette and Sturgeon Bay campuses offer a wide variety of services including personal inventory assessments and information on specific occupations and job search skills. Individuals can have their resume critiqued or schedule a mock interview. Program students can also gain access to the college's job posting site, Wisconsin TechConnect.

For more information on any of the above services, go to **www.nwtc.edu** or call (920) 498-6250 or toll-free, (800) 422-NWTC, ext. 6250.

Classroom Shadows

Classroom shadows provide prospective students the opportunity to experience the rigor and learning environment of a college course.

Campus Tours

Campus tours are conducted on Tuesdays and Thursdays.

For more information on registration for shadows and tours, call (920) 498-6250.

Academic Advising, Counseling, and Special Needs Services

Vision Statement

Your goal is our commitment. We are fully dedicated to providing services and opportunities that ensure learners achieve their goals and dreams.

Services Available:

Academic Advising is available for those who need assistance in course selection, transfer of credit, or general information about programs including admission requirements and academic planning.

Career Counseling is offered for those who are undecided about their career or are considering a career change. Counselors can assist by reviewing career inventory assessments and by discussing previous work experience.

Personal Counseling is available for those who are faced with managing, coping, and dealing with personal problems.

Plus 50 is for adults over 50 who are thinking about re-entering the workforce, changing careers or just learning something new. The Plus 50 office can help you with:
- Returning to school.
- Pursuing financial aid and affordability options.
- Credit for prior learning or experience.
- Choosing credit classes and programs.
- Updating your skills.
- Personal enrichment (fun topics like pottery, photography, and computers).

Contact: Donna Meves, (920) 498-6872 or (800) 422-NWTC, ext. 6872; or donna.meves@nwtc.edu; or learn more online at **www.nwtc.edu/Plus50**

Services for learners with disabilities at all campuses are coordinated through the Special Needs Office on the Green Bay campus. To request special accommodations, call (888) 385-6982. To request sign language interpreter services, call (920) 498-6390 (v). Counselors at the Sturgeon Bay or Marinette campuses and instructors at the regional learning centers can also arrange services at the Green Bay office.

Tutoring

If you need help in a course, NWTC has FREE tutoring available for all credit students. For more information, go to **www.nwtc.edu** and type **Tutoring Services** in the search box or call the Tutoring Center at (920) 498-5262 or (920) 498-5693.

Counseling is available for those interested in the General Education Development® (GED) Certificate, the High School Equivalency Diploma (HSED), Youth Options, Alternative High School, Returning Adult Services, and Drug/Alcohol/ Wellness issues. The Counseling/Advising Center is culturally sensitive and offers the services of the Multicultural Center as a support service. Overall, the advising/counseling interview is a confidential interaction between a trained, experienced professional and the student or group of students.

In Green Bay, Room SC240, (920) 498-5444 or or toll-free: (888) 385-6982; in Marinette, (715) 732-3872, (800) 422-NWTC, ext. 3872; in Sturgeon Bay, (920) 746-4900, (800) 422-NWTC, ext. 4900.

Hours of service at the three campuses are:
Green Bay campus
Monday–Thursday.......... 8:00 a.m.-7:00 p.m.
Friday................................. 8:00 a.m.-5:00 p.m.
Saturday .... 8:00 a.m.-11:00 a.m.

Marinette campus
Tuesday and Wednesday ...8:00 a.m.-7:00 p.m.
Monday, Thursday, and Friday.....................8:00 a.m.-4:00 p.m.

Sturgeon Bay campus
Monday, Wednesday, and Friday.....................8:00 a.m.-4:00 p.m.
Monday, Wednesday..........8:00 a.m.-7:00 p.m.

Appointments are recommended and walk-ins welcomed. Hours may vary during summer and holidays.

For complete program information, go to: www.nwtc.edu

Library

As both a physical and virtual library, NWTC's Library strives to meet your informational needs. The Library's resources include books, e-books, videos/DVD's, online videos, magazines/newspapers, e-journals, and electronic reserves. It offers an open computer lab, group study rooms, and a fiction center. The Library can also borrow materials through interlibrary loan or provide library cards for other area libraries.

With the Library's 24/7 virtual reference service, students can e-mail or instantly chat with a librarian any time! For complete information regarding the Library's resources and services, please go to **www.nwtc.edu/services/library**

Affirmative Action/ Equal Opportunity

Northeast Wisconsin Technical College (NWTC) does not discriminate on the basis of age, race, color, disability, sex, national origin, or other protected class in employment or programs and activities. Discrimination against any individual for reasons of political affiliation, age, race, creed, color, disability, marital status, sex, national origin, ancestry, sexual orientation, arrest record, religion, pregnancy, parental status, service to the armed forces, genetic testing, and the use or non-use of lawful products off the employer's premises during non-working hours is specifically prohibited in employment and in education programs. It is the policy of the District that a formal Affirmative Action program operates within the District.

Questions concerning discrimination, harassment, and/or equal opportunity may be directed to the Director of College Diversity on the Green Bay campus at (920) 498-6826. To file a complaint, provide a detailed description of the time, place, and circumstances to the appropriate personnel according to the grievance procedure outlined in the Student Handbook.

For information or copies of the grievance procedure, call the number above or write to:
Director of College Diversity
Northeast Wisconsin Technical College
2740 West Mason Street
P.O. Box 19042
Green Bay, Wisconsin 54307-9042

NWTC Student E-mail

NWTC students have a free student e-mail account for school and personal use. Students must use their NWTC e-mail account for any College business. They may use it for personal communication if they wish.

To use student e-mail,
go to **www.nwtc.edu** click **my.NWTC** and follow the login instructions.

Let Us Tell You More!

High School Visits–College representatives personally meet with interested students at their high schools to discuss career education opportunities. Visits are scheduled through high school student services offices. Students can ask their counselors when the NWTC rep will be at their high schools. Representatives are also available through classroom presentations, parent nights, parent/teacher conferences, and education and career fairs.

Tech Camp provides career exploration experiences for students entering grades five through eight. Participants tackle a wide range of projects–like gathering police evidence, treating injuries, or changing tires.

For information on the above services, please call the Recruitment Office at (920) 498-6276 or (800) 422-NWTC, ext. 6276.

Student Involvement

Student Life

Activities, clubs, sports, fun, health and wellness ... they're all part of college life. Make them part of yours.

Mission Statement

The mission of the Student Life Office is to promote the development of the whole student by complementing the academic experience through a variety of innovative activities.

Co-curricular events are designed to provide a wide base of experience paralleling professional, leadership oriented, technical, civic, and social activities.

Student Senate

Student Senate representatives from each student organization are named at the beginning of each year. They meet twice monthly to promote the welfare of the student body. The Student Senate Board, made up of officers elected from the representatives, outlines plans and policies.

Student Photo IDs

Student IDs are available to all NWTC students currently enrolled in a class (credit or non-credit).
- Student Photo ID–No charge.
- Wellness Center/Gym Photo ID–
  $5 one time fee-enables students to access the wellness center/gym/walking track.

Lockers

Lockers can be rented for a nominal fee.

Student Discounts

Students can receive discounts at local businesses with their student photo ID. Students can find a complete list of discounts at www.studentsavingsclub.com

Student Ambassador Program

The Ambassador Program is a select group of trained and informed students that represent the College at significant events and activities. Duties of an Ambassador include:
- Conduct campus tours
- Assist with special events, such as job fairs and recruitment events
- Outreach to new and perspective students
- Support Student Life events for current students

Student Organizations

There are student organizations active on the Green Bay, Marinette, and/or Sturgeon Bay campuses. The purpose of each organization is to provide the opportunity to gain educational experience outside of the classroom in working toward desired goals. New organizations are always welcome and encouraged!

- Adults on Course for Excellence and Success (ACES)
- African American Student Network
- Association for Civil Engineering Technicians (ACET)
- Architectural
- Asian American Student Association
- Auto Club
- Ballroom Dance
- Business Professionals of America (BPA)
- Business Professionals of America (BPA) (Marinette)
- Clinical Lab Technicians
- Club ED
- Collision Repair
- Criminal Justice Association
- Dental Assisting
- Dental Hygiene
- Diesel (Sturgeon Bay)
- Electronics Club
- Fire Protection (Marinette)
- Global Connections Student Association
- Heating Ventilation and Air Conditioning (HVAC)
- Health Care Business Services/ Health Information Technology
- Hispanic American Student Association
- Horticulture
- Intertribal Student Council
- Machine Tool
- Manufacturing Engineering Club (MFENG)
- The MEDIA Club
- Medical Assisting
- NWTC Collegiate DECCA
- Phi Theta Kappa International Honor Society
- Physical Therapist Assistant
- Prototype Club
- Respiratory Care
- SkillsUSA
- Society of Manufacturing Engineering (SME)
- Students Taking Responsibility in Drug Education (STRIDE)
- Supply Chain Management
- TEC Club (The Electricity Club)
- Young Farmers Association

College Events

Students are encouraged to join in the variety of activities that are offered on campus. For details, check the online student activities calendar.

- Awards Banquet
- Entertainers: Musicians, Comedians, Hypnotists
- Digital Lounge
- Discounted Marcus Movie Passes
- District Ambassador Competition
- Drive-in Movie
- Family Movie Nights
- "Food for Thought" Speaker Series
- Game Room Tournaments
- Graduation Ceremonies
- Intramural Sports
- Leadership Development Opportunities
- National Association for Campus Activities
- On-Campus Movies in Movie Lounge
- Student Life Facebook
- Student Savings Club
- Student Senate
- Socials (welcome back social, fall picnic, etc.)
- Volunteer Opportunities
- Webcasts
- Wisconsin Student Government

Blood Drive

The American Red Cross makes two visits to the Green Bay campus per year. Students and staff can meet some of their civic responsibility by donating blood.

Tournaments

Tournaments offer individual students the opportunity to participate each semester. These tournaments may include air hockey, foosball, ping pong, pool, darts, and Wii.

Intramural Sports

All sports leagues are supervised by the Student Life Office. The intramural program currently includes basketball, flag football, and volleyball.

Wellness Center/Gym

Cardiovascular and weight equipment along with a basketball court and walking track are available to students with a Wellness Center/ Gym Photo ID card.

For more information, please visit SC118 on the Green Bay campus or call (920) 498-5483.

Student Involvement

Multicultural Center

The Multicultural Center seeks to broaden the College's commitment to cultural enrichment and academic excellence. The Multicultural Center helps students from diverse backgrounds make the most of their education and experience at NWTC. Students interact, develop support groups and friendships, and take advantage of services and resources to help them achieve their academic and career goals.

The Multicultural Center helps to:
- Promote cultural awareness throughout the College.
- Provide support for multicultural organizations.
- Provide a safe place to express ideas.
- Involve students in the intellectual and social cultures of NWTC.
- Advocate for multicultural issues and initiatives.

Services Provided

Assistance with:
- Financial aid
- Scholarships
- Admission process

Support:
- Academic advising
- Personal and social support
- Bilingual assistance
- Cultural and social activities
- Cultural food sharing
- Development of Personal Learning Plan
- Support of student organizations which include the Asian American Student Association (AASA), NWTC Hispanic American Student Association (NHASA), Intertribal Student Council, and African American Student Network

Referrals for:
- Career planning
- Tutoring services
- Community support agencies
- On-campus student support services
- English Language Learner (ELL) classes
- Basic Education including:
  - General Education Development® (GED) Testing
  - High School Equivalency Diploma (HSED) Testing

Assistance in other languages is available
(920) 498-6895 (Hmong)
(920) 498-6894 (Spanish)

For more information please visit SC139 on the Green Bay campus or call (920) 498-5720.

Study Abroad/Global Education

Expand Your Horizons While Enhancing Your Employability!

- Learn more about yourself—step outside your comfort zone.
- Earn credits toward your degree or diploma.
- Improve your intercultural communication skills.
- Increase your global awareness/understanding.
- Get first-hand international experience to set you apart from others when applying for a job.
- Meet interesting people.
- Develop an appreciation for cultural differences in the workplace.
- Enjoy an unforgettable experience that could be the highlight of your college career.

Learn more by contacting:
Kelly Holtmeier, Manager of International Education
kelly.holtmeier@nwtc.edu, (920) 498-6384
or (800) 422-NWTC, ext. 6384;
or go to **www.nwtc.edu/international**

General Education

General Education

General Education courses provide work-oriented learning in communication, mathematics, natural science, and social science. They are designed to help learners succeed in college, on the job, and in daily living. All associate degree and most technical diploma programs require courses in General Education. In addition to supporting NWTC programs, many General Education courses can be transferred to other Wisconsin Technical Colleges and to four-year colleges and universities.

These courses are offered throughout the District. For more information, students can call the Green Bay campus at (920) 498-5444 or (888) 385-6982; the Marinette campus at (715) 735-9361; or the Sturgeon Bay campus at (920) 746-4900, and ask to speak with a counselor.

Before taking General Education courses, students should meet with an NWTC counselor to discuss entrance requirements.

What Students Will Learn: Communication

Based on a program's required communication courses, an NWTC graduate should be able to do the following:
- Use verbal, nonverbal, and listening skills to improve communication.
- Present information before a group.
- Prepare job-seeking documents.
- Compose business and technical documents using a computer.
- Use design techniques to help readers better understand a document.
- Follow the rules of standard English grammar, usage, and punctuation.

Mathematics

Based on a program's required mathematics courses, an NWTC graduate should be able to do the following:
- Apply problem-solving strategies utilizing basic arithmetic skills, including percents, ratios and proportions, appropriate formulas and models. Outcomes will include a general sense of numeracy required in the trades, business and/or industry.
- Demonstrate quantitative literacy by translating applied problems from business and industry into mathematical expressions and solve by applying numerical, graphical, geometric, and algebraic methods.
- Solve problems by using algebraic methods including linear and quadratic relationships. The ability to analyze data using probability and statistical models will allow learner to organize and describe data.
- Solve applied problems from business and industry by using algebraic methods including quadratic and trigonometric relationships. Quantitative skills will include appropriate application of technology.
- Model and solve real-world problems in business or industry using trigonometric, quadratic, parametric, exponential or logarithmic relationships, including the ability to analyze data using probability and statistical models. Quantitative skills will include appropriate application of technology to make inferences to draw conclusions.
- Balance graphical, numerical, algebraic/analytic and communication techniques using differential and integral calculus to obtain solutions to problems in physics and mathematics as well as in business and industry. An appreciation of calculus as a coherent body of knowledge and a human accomplishment will form the foundation for quantitative literacy.

Natural Science

Based on a program's required science courses, an NWTC graduate should be able to do the following:

Anatomy and Physiology

- Recognize and identify human anatomy.
- Explain the physiology of the body systems and how they are affected by daily activity.
- Explain normal and abnormal physiological processes as they relate to proper care of a patient's needs.
- Correlate treatment procedures and integrate these into a physiological approach to patient care.

Chemistry

- Collect and quantitatively analyze empirical data using scientific method.
- Describe chemical principles influencing solutions of the body/environment.
- Utilize scientific terms/nomenclature as related to medicine, agriculture, and environmental applications.
- Describe chemical pathways involved in cellular metabolism during health/disease.
- Argue merits and risks of biotechnology in social and professional context.
- Interpret molecular structures as applied to influences on water solubility, physiology, agriculture, and environmental applications.

Microbiology

- Analyze the characteristics of infectious microorganisms (transmission, course of disease, symptoms, complications, diagnosis, treatment, prevention) related to patient care.
- Discuss the control of infectious organisms (standard precautions, isolations, chemotherapeutic agents, disinfection/ sterilization methods), and roles in controlling/spreading microorganisms.
- Describe the nonspecific/specific defenses of the immune system in fighting disease, how vaccination/immune globulins are used to prevent disease, and how immunosupression and disorders of the immune system are related to patient care and disease.

Physics

- Apply English and metric measurement systems to related fields.
- Apply scientific method/stepwise problem-solving techniques for success in life and work.
- Apply statics (forces) and dynamics (motion) to career-related topics.
- Relate various forms of energy: thermal, electrical/magnetic, sound, light and mechanical to career-related areas.
- Utilize the concepts of properties of matter (elasticity, pressure, density, etc.) in career-related areas.

Social Science

Based on a program's required social science courses, an NWTC graduate should be able to do the following:

- Apply economic principles to life roles as consumer, worker, and citizen.
- Interpret the complexities of globalization from a sociological perspective.
- Evaluate physical, cognitive, and psycho-social development across the lifespan.
- Apply psychological principles to life and work.
- Develop skills to succeed in a diverse world.

Basic Education

Basic Education is designed to help people succeed in college, on the job, and in daily living. Individualized education and group courses are offered at the Green Bay, Marinette, and Sturgeon Bay campuses and at regional learning centers. These classes can help students develop skills to achieve specific goals:

- Preparing to enter college.
- Succeeding in courses.
- Keeping a job, or preparing for a new job.
- Earning a High School Equivalency Diploma (HSED) or General Education Development® (GED) Certificate.
- Learning English.
- Reaching personal goals.

All members of the public are welcome to use any of the services that meet their needs.

Getting Started

Individuals will be evaluated to determine their strengths and areas for improvement. The student and an instructor or counselor will develop a Personal Educational Plan (PEP) based on the student's assessment results, goals, learning style, and abilities.

Skills Help Available through NWTC

A. Math Skills
Basic Math (Arithmetic)
- Whole Numbers
- Fractions
- Decimals
- Percents
- Measurements

Algebra
- Real Numbers
- Algebraic Expressions
- Equations and Inequalities
- Word Problems and Measurements

B. Reading Skills
- Reading Rate
- Comprehension
- Vocabulary

C. Communication (English) Skills
- Writing
- Punctuation
- Grammar
- Capitalization
- Spelling

D. Orientation to College Learning
Individualized programs assist you in achieving academic success in areas such as:
- Note taking
- Concentration
- Listening
- Outlining
- Test taking
- Summarizing
- Textbook study
- Reference skills
- Time management
- Memory techniques

E. Study Skills Seminars
- Strategies for Textbook Study and Concentration
- Using Your Notes and Your Time to Your Advantage
- Preparing for Tests and Easing Anxiety
- Strategies for Studying Math

F. Strategies for Success
- Successful student strategies
- "Make the grade" connections

Basic Education
Mission Statement

The mission of Basic Education is to help a diverse population of learners acquire basic skills and reach their goals for education, employment, and personal enrichment through learning opportunities provided in a positive and nurturing environment.

Choose the Format and Location That Meet Your Needs

The student can choose to study in one of the following formats:

A. Individual learning on an NWTC campus
- Open lab setting-students set their own schedules and work through required text at their own pace.
- Instructors are available.
- Three sites.
- Day and evening hours available.

  For information, call:
  Green Bay Campus
  Academic Skills Lab, (920) 498-5686

  Marinette Campus
  (715) 732-3644 or (715) 732-3498

  Sturgeon Bay Campus
  (920) 746-4910

B. Classroom learning on the Green Bay campus
- Courses offered at set times
  For information, call: (920) 498-5421

Community Sites and Regional Learning Centers
- Crivitz: toll-free (866) 854-3338
- Green Bay Wisconsin Job Center (920) 448-6760
- Luxemburg: toll-free (866) 845-5945
- Niagara: toll-free (866) 528-5883
- Oconto Falls: toll-free (866) 639-6982
- Shawano toll-free: (866) -316-1274

English Language Learner (ELL)

- Varied sites and times.
- Focus on reading, writing, listening, speaking, and using computers on six skill levels.

For English Language Learner (ELL) information, call (920) 498-6297 or (920) 498-7593.

For English Language Learner (ELL) information in **Spanish,** call (920) 498-6894.

For English Language Learner (ELL) information in **Hmong**, call (920) 498-7593.

Basic Education courses are not eligible for financial aid.

Certificates

NWTC offers a variety of short-term programs that lead to certificates. Most range from 6 to 21 credits. Certificates allow students to quickly upgrade their skills in their current fields, change job positions, enter new fields, or jumpstart their degree or diploma programs.

Career Advantage

Employers recognize the value of an NWTC education. In fact, as members of NWTC's advisory committees, employers work with the College's instructors and graduates to design certificates as groupings of courses that meet the ever-changing needs of business and industry. With their up-to-date skills, certificate completers have a competitive edge during hiring and promoting situations.

Right for Working Adults

Certificate programs are an excellent educational option for working adults or anyone with a busy lifestyle. Many certificate courses are conveniently offered at night, on weekends, or online. Classes may also be available on DVD, video or through interactive television and video conference technology (see Ways of Learning, pages 20-21).

Another Approach to College

For students whose goals include earning a degree or diploma, enrolling in a certificate program can be a smart first step. Many of NWTC's certificates transfer to the College's associate degree or technical diploma programs. This enables students to get a strong start on their long-range educational goals, before having to commit to an entire degree or diploma program.

For more information,
contact Enrollment Services: (888) 385-6982

Certificates May be Applied Toward NWTC Degrees and Diplomas

At least 50 percent of the credits from each of the certificates below can transfer into a related NWTC degree or diploma program.

Certificate Name	Receiving Program Name
AODA (Alcohol and Other Drug Abuse)	Human Services (shared program with Northcentral Technical College)
Applied Graphics for Prototype & Design	Marketing and Graphic Communications
Biomedical/Electronics Fundamentals	Electronics (with optional Biomedical specialty)
Business Operations	Business Management
CAD (Computer Aided Drafting)	Mechanical Design Technology
Casino Management: Customer Relationship Mgmt	Casino Management
Casino Management: Foundatations of Gaming Leadership	Casino Management
Casino Management: Regulations & Operations	Casino Management
Casino Management: Security & Surveillance	Casino Management
Computer Support	Computer Support Specialist-IT Computer Support Technician-IT
Contact Center	Marketing
Criminal Justice Law Enforcement Advanced Standing	Criminal Justice-Law Enforcement
Customer Service	Marketing
Digital Photography	Digital Media Technology
Digital Photography-Advanced	Digital Media Technology
Digital Print Technology	Print Technology
Early Childhood Advanced	Early Childhood Education
Early Childhood Foundation	Early Childhood Education
Early Childhood: Infant Toddler	Early Childhood Education
Early Childhood Intermediate	Early Childhood Education
Early Childhood Licensing Basic Ages 0-2	Early Childhood Education
Early Childhood Licensing Basic Ages 3-5 years	Early Childhood Education
Early Childhood Premier	Early Childhood Education
Early Childhood: The Preschool Certificate	Early Childhood Education
Entrepreneurship	Business Management (Entrepreneurship Track)
Ethical Leadership	Leadership Development
Film & Digital Broadcast	Digital Media Technology
Global Business	Business Management (Global Business Track)
Greenhouse Grower	Landscape Horticulture
Health Care Leadership	Leadership Development
Health Care Leadership Adv	Leadership Development
Introduction to the Instructional Assistant Careers Cert	Instructional Assistant
Leadership in Human Relations	Accounting; Casino Management; Credit Business Management; Criminal Justice-Law Enforcement; Criminal Justice-Corrections; Financial Institutions Management; Network Specialist-IT; Paralegal; Supply Chain Management
Networking	Network Specialist-IT
Parametric Modeling	Mechanical Design Technology
Plant Healthcare Management	Landscape Horticulture
Promotions & Event Management	Marketing
Quality Improvement & Innovation	Leadership Development
Recording and Audio Engineering	Digital Media Technology
Renewable Energy-Solar	Solar Energy Technology
Service Writer	Automotive Technology Associate Degree
Small Business Bookkeeping	Accounting
Software Level-1	Administrative Professional; Office Professional
Software Level-2	Administrative Professional
Special Education	Instructional Assistant
Supervision	Leadership Development
Supporting Children's Learning	Instructional Assistant
Supply Chain Management	Supply Chain Management
Utility Management	Leadership Development
Web Application Programming	Web Development
Web Design	Web Development

Associate Degree and Technical Diploma Programs

Green Bay Campus
Accounting
Accounting Assistant
Administrative Professional
Apprenticeship
Applied Engineering Technology
Architectural Technology
Auto Collision Repair and Refinishing Technician
Auto Collision Repair and Refinishing Technology
Automation Engineering Technology
Automotive Technician
Automotive Technology
Business Management
Casino Management
Certified Medication Assistant
Civil Engineering Technology
Clinical Laboratory Technician
Computer Support Specialist-IT
Computer Support Technician-IT
Credit Business Management
Criminal Justice-Corrections
Criminal Justice-Law Enforcement
Criminal Justice-Law Enforcement Academy
Dental Assistant
Dental Hygienist
Diagnostic Medical Sonography
Digital Media Technology
Early Childhood Education
Electrical Engineering Technology
Electrical Power Distribution
Electricity
Electro-Mechanical Technology
Electronics (with optional Biomedical specialty)
Energy Management Technology
Enology
Financial Institutions Management
Gas Utility Construction and Service
General Studies Transfer
    (UW-Green Bay or UW-Oshkosh)
Gerontology
Health Information Technology
Heating, Ventilation, Air Conditioning and
    Refrigeration Technology
Human Services
Hotel and Restaurant Management
Individualized Technical Studies
Individualized Technical Studies-Journeyworker
Industrial Mechanic

Instructional Assistant
Landscape Horticulture
Machine Tool-CNC Technician
Machine Tool Operation
Manufacturing Engineering Technology
Marketing
Marketing and Graphic Communications
Marine Construction
Marine Engineering Technology
Mechanical Design Technology
Medical Assistant
Network Specialist-IT
Nursing-Associate Degree
Office Professional
Paralegal
Paramedic-Emergency Medical Technician
Physical Therapist Assistant
Power Engineer and Boiler Operator
Practical Nursing
Print Technology
Prototype and Design
Radiography
Respiratory Therapist
Solar Energy Technology
Supply Chain Management
Surgical Technologist
Utilities Engineering Technology
Viticulture
Web Development
Wind Energy Technology
Welding
Wood Tech

Marinette Campus
Accounting
Administrative Professional
Apprenticeship
Automotive Technician
Automotive Technology
Computer Support Specialist-IT
Computer Support Technician-IT
Fire Protection Engineering Technology
General Studies Transfer
    (UW-Green Bay or UW-Oshkosh)
Machine Tool-CNC Technician
Machine Tool Operation
Marine Construction
Marine Engineering Technology
Marketing
Nursing-Associate Degree
Office Professional
Physical Therapy
Welding

Sturgeon Bay Campus
Accounting
Administrative Professional
Apprenticeship
Automotive Technician
Automotive Technology
Business Management
Diesel and Heavy Equipment Technician
Diesel Equipment Technology
Financial Institutions Management
General Studies Transfer
    (UW-Green Bay or UW-Oshkosh)
Hotel and Restaurant Management
Marketing
Nursing-Associate Degree
Office Professional
Practical Nursing
Supply Chain Management

Throughout District
Emergency Medical Technician-Basic
Emergency Medical Technician-
    Intermediate Technician
Farm Business and Production Management
Health Care Business Services
Leadership Development
Nursing Assistant

Students in shared programs may fulfill their General Studies requirements at any NWTC campus unless otherwise noted.

Toll-Free: (888) 385-6982
For complete program information,
go to: www.nwtc.edu
2011-2012
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Accounting

Program Code 101011
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Accounting prepares students for positions as accountants. Accountants work with accounting systems, analyze business records, prepare financial reports, and supervise bookkeepers.

Program Outcomes

- Manage general ledger.
- Manage accounts receivable.
- Manage accounts payable.
- Maintain inventory control.
- Prepare payroll.
- Prepare income taxes.
- Account for fixed assets.
- Perform job order cost accounting.
- Perform process cost accounting.
- Perform standard cost accounting.
- Analyze financial statements.
- Prepare budgets.
- Manage cash flows.
- Use corporate accounting procedures.
- Analyze accounting information to make appropriate decisions.
- Perform reconciliation procedures.
- Create spreadsheets.
- Perform accounting functions using computerized accounting packages.
- Demonstrate proficiency in math using table top calculator and T.I. Business Analyst calculator.
- Perform activity-based costing.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math (algebra recommended).
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 87. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Accounts Payable/Receivable Accountant: records and pays bills of the company, records receivables transactions, bills customers at regular intervals, records charges and payments.

Payroll Accountant: handles the payroll for a business; end-of-period reports; time cards; computes overtime, deducts taxes, and prepares payroll checks; and reconciles payroll accounts.

Inventory Control Accountant: records receipt and dispersal of goods using a perpetual inventory system, assigns costs using an inventory valuation method.

Cost Accountant: determines cost of products manufactured; determines variations from standards in labor, materials, and overhead; prepares budgets; and prepares various management reports.

Public Accountant: keeps records for small business; prepares payroll records; prepares financial records, income statements, and balance sheets.

Accountant: keeps financial records, prepares financial records (income statements, balance sheets, budgets, and summary reports), and analyzes accounts.

Tax Accountant: prepares tax returns for both state and federal governments, assists in tax planning and tax shelters, and files payroll reports and quarterly reports as required by government agencies.

Governmental/Nonprofit Accountant: keeps records of governmental/nonprofit agencies using the fund method of accounting.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Auditor
- Certified Public Accountant
- Comptroller
- Treasurer
- Trust Officer

The following certificates/technical diplomas may be applied toward this program:
- 901011, Small Business Bookkeeping
- 908094, Leadership in Human Relations

Curriculum

The Accounting Associate Degree is a two-year, four-semester program. Accelerated options offered at night. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-101-107	Accounting Applications/Proc	2
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-101-105	Accounting-Computer Ledger	2
10-101-120	Accounting 2	4
10-101-151	Accounting-Payroll	3
10-801-196	Oral/Interpersonal Comm	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-101-131	Accounting-Intermediate	4
10-101-134	Accounting-Cost	4
10-101-154	Accounting-Personal Tax	4
10-101-189	Accounting-Applying Quickbooks	3
10-114-109	Credit-Policies/Procedures	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-101-142	Accounting-Managerial	3
10-101-143	Accounting-Govern/Nonprofit	2
10-101-152	Accounting-Business Tax	2
10-101-153	Accounting-Computerized Tax	1
10-101-156	Accounting-Auto Appl	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-105 ACCOUNTING-COMPUTER LEDGER ...applications on calculators or keypad such as addition, subtraction, multiplication, division, percent, and computers using Microsoft Excel. (Prerequisites: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles; 10-103-131, Micro: Excel-Intro; 10-103-132, Micro: Excel-Part 2)

10-101-107 ACCOUNTING APPLICATIONS AND PROCEDURES ...use of financial calculator, checkbook records, purchasing, shipping/receiving, A/R, and A/P systems, markups, discounts, credit charges, time value of money, depreciation methods, inventory methods, and financial statement analysis.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-101-120 ACCOUNTING 2 ...inventories, fixed assets, current liabilities including payroll and notes payable, business formations, capital stocks, dividends, bonds, cash flow statements, and financial statement analysis. (Prerequisite: 10-101-110, Accounting 1)

10-101-131 ACCOUNTING-INTERMEDIATE ...understand income statements, balance sheets, cash flow statements, cash and receivables, inventories and cost of goods sold, noncurrent operating assets, earnings per share, accounting changes and corrections, financial statement analysis. (Prerequisite:10-101-120, Accounting 2)

10-101-134 ACCOUNTING-COST ...contemporary cost environments and issues; selecting, analyzing, and tracking costs; production costing methods: job order, process, standard costs, by-product, and joint costing. (Prerequisites: 10-101-105, Accounting-Computer Ledger; 10-101-120, Accounting 2)

10-101-142 ACCOUNTING-MANAGERIAL ...cost behavioral patterns, cost-volume-profit relationships, segment reporting, profit planning, budgets and overhead analysis, decentralized operations, pricing decisions, capital investment decisions, and service department costing. (Prerequisite: 10-101-134, Accounting-Cost)

10-101-143 ACCOUNTING-GOVERNMENTAL & NONPROFIT ...use fundamental knowledge for understanding the operation of governmental and nonprofit entities, their accounting, and financial reporting practices and the standards that shape their accounting and financial reporting systems. (Prerequisite: 10-101-120, Accounting 2)

10-101-151 ACCOUNTING-PAYROLL ...payroll and personnel records, social security, withholding tax, unemployment compensation, time sheets and time-keeping records, and legal aspects of payroll. (Prerequisite: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles)

10-101-152 ACCOUNTING-BUSINESS TAX ...learners will be introduced to federal tax laws as they apply to business entities and will prepare business income tax returns. (Prerequisite: 10-101-154, Accounting-Personal Tax)

10-101-153 ACCOUNTING-COMPUTERIZED TAX ...learners will prepare individual income tax returns using a commercial software package. Requires completion of the Accounting-Personal Tax course. (Prerequisite: 10-101-154, Accounting-Personal Tax)

10-101-154 ACCOUNTING-PERSONAL TAX ...history and research of tax law and regulations; preparation of Federal individual income taxes including forms 1040, 1040A, and 1040EZ, and supporting schedules and forms.

10-101-156 ACCOUNTING-AUTOMATED APPLICATIONS ...Windows, file management, worksheet applications, database applications, macros, evaluation of accounting software, installation of software, and conversion of manual accounting system to a computerized system. (Prerequisites: 10-101-120, Accounting 2; 10-101-105, Accounting-Computer Ledger; 10-103-121, Micro: Word-Intro)

10-101-189 ACCOUNTING-APPLYING QUICKBOOKS ...learners will be introduced to basic and advanced features of Quickbooks and will apply skills in realistic business simulations including creating accounts, invoicing, budgeting, preparing statements, journalizing and graphing. (Prerequisite: 10-101-110, Accounting 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/ footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-114-109 CREDIT-POLICIES AND PROCEDURES ...credit/collection policies, procedures, and law, credit investigations, evaluate credit worthiness, support credit decisions, create credit forms, fraud, bankruptcy, techniques to control and manage accounts receivable.

Accounting Assistant

Program Code 311011
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Accounting Assistant prepares students for entry-level accounting positions. Accounting Assistants work with accounts receivable, accounts payable, inventory, and payroll.

Program Outcomes

- Manage general ledger.
- Manage accounts receivable.
- Manage accounts payable.
- Maintain inventory control.
- Prepare payroll.
- Account for fixed assets.
- Analyze financial statements.
- Use corporate accounting procedures.
- Perform reconciliation procedures.
- Create spreadsheets.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math (algebra recommended).
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 87. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Accounts Payable/Receivable Accountant: records and pays bills of the company, records receivables transactions, bills customers at regular intervals, records charges and payments.

Payroll Accountant: handles the payroll for a business; end-of-period reports; time cards; computes overtime, deducts taxes, and prepares payroll checks; and reconciles payroll accounts.

Inventory Control Accountant: records receipt and dispersal of goods using a perpetual inventory system, assigns costs using an inventory valuation method.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Cost Accountant
- Accountant
- Tax Accountant

Note

These credits can be applied to the first year of the two-year Accounting program.

Curriculum

The Accounting Assistant Technical Diploma is a one-year, two-semester program. Accelerated options offered at night. Upon graduation, a student will have completed 27 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-101-107	Accounting Applications/Proc	2
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	15

SECOND SEMESTER

Catalog No.	Description	Credits
10-101-105	Accounting-Computer Ledger	2
10-101-120	Accounting 2	4
10-101-151	Accounting-Payroll	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	12
	TOTAL CREDITS	27

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-105 ACCOUNTING-COMPUTER LEDGER ...applications on calculators or keypad such as addition, subtraction, multiplication, division, percent, and computers using Microsoft Excel. (Prerequisites: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles; 10-103-131, Micro: Excel-Intro; 10-103-132, Micro: Excel-Part 2)

10-101-107 ACCOUNTING APPLICATIONS AND PROCEDURES ...use of financial calculator, checkbook records, purchasing, shipping/receiving, A/R, and A/P systems, markups, discounts, credit charges, time value of money, depreciation methods, inventory methods, and financial statement analysis.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-101-120 ACCOUNTING 2 ...inventories, fixed assets, current liabilities including payroll and notes payable, business formations, capital stocks, dividends, bonds, cash flow statements, and financial statement analysis. (Prerequisite: 10-101-110, Accounting 1)

10-101-151 ACCOUNTING-PAYROLL ...payroll and personnel records, social security, withholding tax, unemployment compensation, time sheets and time-keeping records, and legal aspects of payroll. (Prerequisite: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

Administrative Professional
Program Code 101066
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Administrative Professional students learn to be efficient and effective office employees through application of business procedures (proofreading, telephone messaging, records management, meeting and travel arrangements, communication, project management, Internet research, etc.) and software skills (Windows, word processing, desktop publishing, spreadsheets, presentation graphics, web creation, electronic calendaring, and database).

All software materials assist in preparing students for the Microsoft Office Specialist (MOS) certification exams.

With additional education and/or work experience, students will be prepared for certification exams offered by the International Association of Administrative Professionals (IAAP).

Program Outcomes

- Communicate business messages effectively.
- Prioritize and manage workflow.
- Select appropriate technology to perform office tasks and manage information.
- Use efficient techniques and appropriate resources in a business environment.
- Plan events, travel, conferences, and meetings.
- Research, analyze, and present information.
- Integrate appropriate software to produce effective business documents.
- Demonstrate professionalism in a business environment.
- Contribute to team process using leadership principles.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math.
- A minimum keyboarding skill of 20 WPM using the touch method is recommended.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 66; Arithmetic: 41; Sentence Skills: 76. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Administrative Professional: schedules appointments; communicates effectively in person, on the phone, and in writing; prepares agendas; takes minutes; arranges itineraries; schedules travel plans; processes mail; uses word processing, spreadsheets, presentation graphics, electronic calendaring, desktop publishing, web creation, and/or database software; maintains confidentiality, and possibly supervises others.

Customer Service Representative: receives and places telephone calls; maintains solid customer relationships by handling their questions and concerns with speed and professionalism; performs data entry and uses software programs; may require research skills to troubleshoot customer problems; excellent communication abilities.

Front Desk Coordinator: manages the company's lobby area; greets and directs all visitors, including vendors, clients, job candidates and customers; ensures completion of paperwork, sign-in and security procedures; handles special administrative projects as well as overflow work from department and executive assistants; depending on the size of the firm, also may answer incoming calls.

Office/Facilities Manager: coordinates various office support services, including purchasing and facilities management. Requires strong communication skills and some accounting knowledge. May include supervision of office administrative staff.

Project Coordinator: Works with internal and external parties to organize the various components needed to initiate, run and conclude major projects. Duties include coordinating schedules and activities, placing orders for supplies and services, and tracking progress and results. Requires excellent communication skills and extensive knowledge of database and project management software. Often reports to product development, project management or marketing executives. The position is especially prevalent in construction, transportation and technology industries.

Virtual Assistant: works from own premises and provides office support services such as making customer contacts; writing reports; editing documents; sending out marketing materials; setting up and maintaining databases; handling billing and bookkeeping; and updating websites.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Executive Assistant
- Trainer/Instructor
- Event Coordinator
- Office Manager
- Team Leader

Curriculum

The Administrative Professional Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
10-103-121	Micro: Word-Intro	1
10-103-122	Micro: Word-Part 2	1
10-103-151	Micro: PowerPoint-Intro	1
10-106-103	Info Process Principles	3
10-106-107	Keyboard-Speed Building 1	1
10-106-112	Keyboard-Speed Building 2	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	18

SECOND SEMESTER

10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-106-126	Admin Business Procedures 1	2
10-106-132	Proofreading/Editing Essen 2	2
10-106-142	Software Projects	3
10-106-152	Records Management	2
10-106-172	Telephone/Messaging Skills	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	15

THIRD SEMESTER

10-103-132	Micro: Excel-Part 2	1
10-103-142	Micro: Access-Part 2	1
10-103-163	Micro: Expression Web	1
10-103-165	Micro: Publication Software	1
10-106-125	Skills for Admin Leadership	3
10-106-136	Admin Business Procedures 2	3
10-809-197	Contemporary Amer Society	3
10-809-199	Psychology Of Human Relations	3
	Elective	3
	SEMESTER TOTAL	19

FOURTH SEMESTER

10-101-103	Accounting Principles-Applied	2
10-102-100	Bus and Info Tech Occup Prep	1
10-106-137	Integrated Software Applic	2
10-106-199	Admin Prof Intern Practicum	2
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	68

CURRICULUM NOTE
Portfolio: Students are required to complete a program portfolio prior to graduation.

SUGGESTED ELECTIVES
Office Politics, 10-106-157
Meetings-Organizing, 10-106-171

The following certificates/technical diplomas may be applied toward this program:
- 311061, Office Professional
- 901031, Software Level 1
- 901032, Software Level 2

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-103 ACCOUNTING PRINCIPLES-APPLIED ...the accounting fundamentals, recording of business transactions, preparation of financial statements, accrual accounting, accounting for service enterprises and merchandising businesses, payroll, and use of Quickbooks software.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; text flow; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. Requires strong introductory Word skills or Word-Intro.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-142 MICRO: ACCESS-PART 2 ...creating advanced queries, custom forms, multi-page forms, custom reports, integrating, pivot tables, pivot charts, and labels. Requires strong introductory Access skills.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-103-163 MICRO: EXPRESSION WEB ...create a website, customize and manage web pages and images; create and use interactive forms using style sheets; publish web pages to a web server. Requires Windows experience.

10-103-165 MICRO: PUBLICATION SOFTWARE ...create and edit newsletters, brochures, flyers, forms, business cards, emails, e-commerce websites, and other business publications using publication layout software. Requires Windows experience.

10-106-103 INFORMATION PROCESSING PRINCIPLES ...information processing cycle and workflow, terminology, hardware, software, networks, digital media, ergonomics, security, systems, Internet, and career opportunities.

10-106-107 KEYBOARD-SPEED BUILDING 1 ...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic speed developed is 40 wpm in a 3-minute timing. Requires touch keyboarding at 30 wpm.

10-106-112 KEYBOARD-SPEED BUILDING 2 ...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic speed developed is 45 wpm in a 5-minute timing. Requires touch keyboarding at 40 wpm.

10-106-125 SKILLS FOR ADMINISTRATIVE LEADERSHIP ...an understanding of administrative leadership, team collaboration, quality management, utilization of data in the decision-making process, and an introduction to software applications utilized in project management and managing information.

10-106-126 ADMINISTRATIVE BUSINESS PROCEDURES 1 ...today's global business environment including time management using software tools, flexible work arrangements, processing mail, meeting coordination, copiers and fax machines, and application of common business communication using appropriate formats. Requires Windows, intermediate Word, PowerPoint, and Outlook experience. (Prerequisite: 10-106-131, Proofreading/Editing Essentials 1; Corequisite: 10-106-142, Software Projects)

10-106-131 PROOFREADING/EDITING ESSENTIALS 1 ...develop skills for using, identifying, and correcting grammar, spelling, punctuation, capitalization, number usage and abbreviations for creating error-free business documents. Introduction and use of reference manuals/resources and portfolio guidelines. (Touch keyboarding and basic word processing skills are assumed.)

10-106-132 PROOFREADING/EDITING ESSENTIALS 2 ...apply advanced proofreading and editing skills in electronic and printed business documents using Proofamatics technique, transcription equipment, reference manuals, and resources. Multitasking and decision-making skills are enhanced through transcription and proofreading. (A passing grade in Proofreading/Editing Essentials 1 is a strong recommendation for success.)

10-106-136 ADMINISTRATIVE BUSINESS PROCEDURES 2 ...today's global business environment including Internet-based research, event planning, customer service, integration of technology, virtual meeting technologies, financial responsibilities, travel coordination, leadership techniques, and career advancement.

10-106-137 INTEGRATED SOFTWARE APPLICATIONS ...manipulate and manage data to prepare integrated documents using Word, Excel, Access, PowerPoint, and Publisher, create electronic portfolio using Expression Web, and use practice certification software tests to demonstrate competencies. Requires completion of all Microsoft Office software classes.

10-106-142 SOFTWARE PROJECTS ...applying Windows and Word features to manage and format business documents while exercising decision-making, increasing efficiency, and enhancing keyboarding skills. Requires Windows, advanced Word background, and minimum 40 wpm keyboarding skill.

10-106-152 RECORDS MANAGEMENT ...major systems of filing classification: alphabetic, numeric, geographic and subject; retention and disposition of records; records equipment and technology.

10-106-153 PROFESSIONAL PROFILE ...developing a professional image and attitude, including study of business ethics and etiquette; goal setting; anger, stress, and time management; understanding of diverse cultures; and development of platform skills.

10-106-172 TELEPHONE/MESSAGING SKILLS ...using the telephone effectively and efficiently in the world of work; telephone etiquette, messaging, and voice mail.

10-106-199 ADMINISTRATIVE PROFESSIONAL INTERN PRACTICUM ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Applied Engineering Technology
Program Code 106237
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
This program is designed to prepare technicians and team members for entry-level work in manufacturing. In today's competitive environment, there is a need for specialized training in a variety of manufacturing areas.

Program Outcomes
- Perform safe work practices.
- Understand and apply basic electromechanical skills.
- Describe the role of an operator in a manufacturing industry.
- Solve typical manufacturing process-related problems.
- Communicate and perform in a team environment.
- Understand and apply knowledge of Lean Manufacturing.
- Understand basic business ethics and finance.

Employment Potential
Graduates of this program will have potential for employment in the manufacturing industry as entry-level process team members or operators.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Applied Engineering Technology on the College Math assessment is 50.
- Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Curriculum
The Applied Engineering Technology Associate Degree program is a two-year, four-semester program. Upon graduation, a student will have completed 65 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-420-171	Machine Tool Processes 1	1
10-442-150	Machine Fabrication 1	1
10-449-111	Manufacturing Safety	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-105	Rigging Systems 1	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16

SECOND SEMESTER

10-196-199	Business Ethics	3
10-420-172	Machine Tool Processes 2	1
10-442-151	Machine Fabrication 2	1
10-623-156	Manufacturing Processes	2
10-664-102	Automation 3: PLC	1
10-804-118	Interm Algebra w Apps	4
10-809-195	Economics	3
	Elective	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-196-189	Team Building/Prob Solve	3
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-620-140	Machine Wiring and Safety	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-660-104	DC 1: Introduction	1
10-801-197	Technical Reporting	3
10-806-143	College Physics 1	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-101-184	Business Finance/Budgeting	3
10-182-110	Lean Operations Mgmt	3
10-623-157	Process Instrumentation	3
10-809-103	Think Critically & Creatively	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	65

SUGGESTED ELECTIVES
10-103-111 Micro: Windows Intro
10-804-107 College Math
10-196-192 Managing-Quality
10-106-145 Keyboarding

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-184 BUSINESS FINANCE/ BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: Math w Business Apps)

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, six sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-199 BUSINESS ETHICS ...ethical points-of-view, morality/ethical theory, utilitarianism, Kantian ethics, justice and the market system, whistle-blowing, trade secrets/conflict of interest, privacy, advertising, product safety, corporate social responsibility, international business.

10-420-171 MACHINE TOOL PROCESSES 1 ...semi-precision and precision measurement, vertical and horizontal saws, principles of drilling and drilling machines.

10-420-172 MACHINE TOOL PROCESSES 2 ...engine lathes and engine lathe operations, milling machines and milling operations, grinding and finishing. (Prerequisite: 10-420-171, Machine Tool Processes 1)

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-442-151 MACHINE FABRICATION 2 ...a study of fabrication processes including shears, saws, rolls, braces and benders. (Corequisite: 10-442-150, Machine Fabrication 1)

10-449-111 MANUFACTURING SAFETY ...safety topics and practices specifically related to industrial work environments, personal protective equipment, and methods to reduce the risk of personal injury.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system.

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt Drives, synchronous belt drives, lubrication, and alignment. (Prerequisite: 10-620-121, Mechanics 1: Basic)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, Compound DC, AC Induction, and specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-623-156 MANUFACTURING PROCESSES ...manufacturing operator orientation, operator roles, responsibilities and expectations, production processes and equipment, general product handling.

10-623-156 PROCESS INSTRUMENTATION ...covers instruments and instrumentation used in the process industry, control systems, and basic troubleshooting.

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

Apprenticeship

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

What is Apprenticeship?

It is an earn-while-you-learn program of on-the-job training combined with related classroom instruction that is normally provided by the district technical college.

As an apprentice, students are trained under a written training agreement called an indenture. While indentured, the employer agrees to teach the student the skills of the trade and the apprentice agrees to learn the skills involved. Other conditions of the indenture, such as the length of training, amount of pay, the rate of periodic pay increases, and the related classroom hours are covered. An apprenticeship is one of the best ways to enter a skilled occupation.

What are the Benefits of Apprenticeship?

- Apprenticeship offers variety and a good work/life balance, combining challenging on-the-job training with job-related classroom instruction at NWTC.
- Apprentices are paid for the hours they spend learning on the job and in the classroom.
- Apprentices qualify for increasing pay levels each year, plus benefits offered by the employer, such as health insurance, paid vacations and retirement benefits.
- Apprenticeship training at NWTC focuses on the skills and knowledge apprentices use on the job.
- 2009 Apprenticeship completers reported an average annual wage of $58,150 when they were surveyed a few months after completion.
- When apprentices complete their program and become journeyworkers, they have ensured their employability in industry. Journeyworkers may become foremen, supervisors, or project managers and can eventually go into business for themselves.
- Apprenticeship completers who obtain journey level status are eligible for 32 credits toward an associate degree.

What is Involved?

An indentured apprentice works a regular workweek, is paid apprentice wages, and also attends paid-related instruction on a regularly scheduled basis. The apprentice's progress in both the on-the-job training and classroom instruction is evaluated and appropriate records are maintained.

There is no discrimination in any phase of apprenticeship employment and training.

Upon completion of the training program, apprentices will receive a certificate from the state of Wisconsin certifying each one as a completed apprentice. To protect the interests of all parties concerned and to assist in the enforcement of the various aspects of the agreement, the Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards, is given the responsibility of overall supervision of the apprenticeship program.

Apprenticeship is not an on-demand program. All applicants must apply to the programs through the respective committee or sponsor. The Apprenticeship Office at NWTC can assist with the application process. Contact the Apprenticeship Office at: (920) 498-5682.

What are the Qualifications for an Applicant?

The basic requirement is that the applicant be at least 16 years of age. In all cases, however, the applicant is also required to be a high school graduate or to have passed the high school equivalency test. Applicants are also required to take the Academic Skills Assessment test which is provided at Northeast Wisconsin Technical College or other trade-specific exam by committee.

Most employers and/or joint apprenticeship committees have approved selection standards with more exacting requirements. In some trades, the requirements for the applicant include one or two years of high school math. Some trades require that the applicant take an aptitude test.

How Long Does it Take?

The length of the apprenticeship depends upon the skilled occupation involved. Apprentice programs vary from two to five years. The average program is four years in length.

What Related Classroom Instruction is Involved?

The number of classroom hours range from 288 hours to 1,008 hours of paid-related instruction, depending upon the skilled occupation, with the average being 400 hours. This related instruction teaches the apprentice the theory behind the skills learned on the job. Apprentices are required to attend night school on their own time and at their own expense.

Where is the Related Training Offered?

The Clayton J. Smits Apprenticeship Center of Northeast Wisconsin Technical College offers related classroom instruction at the Green Bay, Marinette, and Sturgeon Bay campuses.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

What is an Apprenticeable Occupation?

An apprenticeable occupation is clearly identified and commonly recognized throughout an industry. It involves manual, mechanical, or technical skills and knowledge that require a minimum of 2000 hours of on-the-job work experience. It also requires an average of 400 hours of paid-related classroom instruction to supplement the on-the-job training. The state of Wisconsin has recognized more than 300 apprenticeable occupations. Some of the occupations or fields served by NWTC are:

Carpenter
Electrician
    Construction Electrician
    Residential Electrician
    Voice Data Video Technician
Electrical/Instrumentation
Industrial Electrician
Foundry/Pattern Maker
Instrumentation
Machinist
    Regular Machinist
    Maintenance Machinist
    Tool & Die
Mason
    Bricklayer
    Block Layer
    Cement Finisher
    Plasterer
    Tile Setter
Machine Repair
Mechanical Adjuster
Maintenance Mechanic (Millwright)
Industrial Maintenance Mechanic
Industrial Pipefitter
Plumber
Sheet Metal
Steamfitter
ABC HVAC

How Do I Start?

Start by learning what you can about the skilled occupation in which you are interested. Talk to people who are in the occupation, both employers and employees, counselors at your high school, or the local technical college, employers' associations, and labor unions. Remember, looking for an apprenticeship is like looking for a job. Applications should be made directly with employers or joint apprenticeship committees.

If you are entering an occupation that involves action by a joint apprenticeship committee, it will be necessary for you to go through their selection and interview procedures. Very often a committee may maintain a waiting list of qualified applicants who passed the committee's selection procedures.

What is an Apprenticeship Employer?

An employer must be an individual, a joint apprenticeship committee, an owner of a business, a company, or a corporation who can teach the skills involved in the occupation. All sponsors of indentured apprentices are equal opportunity employers.

What are Apprentice Wages?

Wages in the various skilled occupations and localities vary; most apprentices start at approximately 50 percent of the current skilled rate.

The apprentice is on a progressive wage scale with increases every six months, so that during the program the apprentice will average 60 percent of the skilled rate.

How Do I Get More Information?

For more information about a specific skilled occupation, contact:

Bureau of Apprenticeship Standards
    2740 W. Mason Street
    P.O. Box 19042
    Green Bay, WI 54307-9042
    (920) 492-5618

Apprenticeship Manager
Trades & Engineering Technologies
Northeast Wisconsin Technical College
    2740 W. Mason Street
    P.O. Box 19042
    Green Bay, WI 54307-9042
    (920) 498-5704
    (800) 422-NWTC, ext. 5704

Architectural Technology
Program Code 106141
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Architectural Technology prepares students to become residential designers, and under the supervision of an architect or engineer, to produce construction documents for wood, steel, masonry and concrete commercial structures. The program also prepares students to work in many fields related to architecture and construction including cabinetry, estimating, structural steel, reinforced concrete as well as mechanical, electrical and plumbing.

Program Outcomes
- Develop architectural drawings for commercial building using steel, concrete and masonry.
- Develop residential drawings to meet code and client criteria.
- Perform technical calculations and produce drawings for mechanical, electrical and plumbing systems.
- Produce structural drawings and details for residential and commercial buildings.
- Explain the design and construction process.
- Think critically and creatively, solve problems effectively.
- Speak and write effectively about architectural facts and ideas.
- Communicate architectural ideas graphically utilizing sketching techniques.
- Work cooperatively and professionally.
- Display a positive attitude toward their profession.
- Apply mathematical principles, codes, manufacturers' standards, tables, and technical manuals in design and production of construction documents.
- Evaluate structural elements using the principles of statics and the strength of materials.
- Choose appropriate materials for use in building construction.
- Estimate materials required for construction.
- Operate computer-based technologies currently used to prepare basic presentation drawings, and construction documents.
- Apply sustainable principles to building construction.
- Explain how loads are distributed and transferred through the structure of a building.

Employment Potential
Architectural Technician: works under the direction and supervision of an architect or professional engineer, preparing working drawings for residential, commercial and industrial buildings.

Building Materials Sales Person: works in retail sales of building products in a building materials center.

Building Mechanical Technician: works under the direction and supervision of an architect or professional engineer, preparing working drawings for mechanical, electrical and plumbing systems within a building.

Shop Drawing Draftsperson: works under the supervision of a professional engineer, developing fabrication and erection drawings for components used in construction.

Structural Draftsperson: works under the direction and supervision of an architect or professional engineer, preparing working drawings for steel, concrete, and wood building systems.

Residential Designer: works independently designing and drafting homes for building materials centers or residential contractors.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Architect
- Building Inspector
- Senior Draftsperson
- Commercial or Industrial Estimator
- Structural Engineer
- Specification Writer
- Project Manager

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 88; Arithmetic: 90; Sentence Skills: 90. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Architectural Technology on the College Math assessment is 50.
- High school background in mathematics, science, and industrial education and/or construction related experience.
- High school algebra or equivalent.
- Proficiency with Word, Excel, PowerPoint, Windows and the Internet.

Curriculum
The Architectural Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-614-210	Arch Principles	4
10-614-211	Arch Revit Intro	1
10-614-212	Arch CAD Intro	1
10-614-213	Bldg Materials	2
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
	SEMESTER TOTAL	15

SECOND SEMESTER

Catalog No.	Description	Credits
10-614-214	Bldg Green Intro	1
10-614-230	Arch Residential	4
10-614-231	Arch Revit Advanced	2
10-614-232	Struct Residential	2
10-804-196	Trigonometry w Apps	3
10-809-172	Race Ethnic & Diversity	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	18

THIRD SEMESTER

Catalog No.	Description	Credits
10-614-250	Arch Comm Studio I	4
10-614-252	Arch Bldg Science	2
10-614-253	Struct Commercial	3
10-614-254	Bldg Green Res	1
10-801-197	Technical Reporting	3
10-804-195	College Algebra w Apps	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

Catalog No.	Description	Credits
10-614-251	Bldg Estimating	2
10-614-270	Arch Comm Studio II	4
10-614-271	Struct Analysis	3
10-614-272	Bldg MEP Systems	3
10-614-273	Bldg Green Comm	1
	Elective	4
	SEMESTER TOTAL	17
	TOTAL CREDITS	66

SUGGESTED ELECTIVES
Land Survey/Site Development, 10-607-106
Professional Practices, 10-614-203

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-614-210 ARCHITECTURAL PRINCIPLES ...establishes a background in graphic communication and the field of architecture. Creation, interpretation, and effective use of construction documents and specifications will be examined. Basic architectural sketches and drawings will be prepared. (Prerequisite: Accepted into Architectural; Corequisite: 10-614-213, Bldg Materials)

10-614-211 ARCHITECTURAL REVIT INTRO ...introduces the parametric design software Autodesk Revit used for building information modeling. Basic design and documentation tools will be employed. A simple building design will be modeled that matches given specifications. (Prerequisite: Accepted into Architectural)

10-614-212 ARCHITECTURAL CAD INTRO ...incorporates the use of AutoCAD for generating building details. Basic to intermediate CAD commands will be covered as they relate to architectural drawings. Accurate drawings that incorporate symbols, dimensions and notes will be created. (Prerequisite: Accepted into Architectural)

10-614-213 BUILDING MATERIALS ...considers material properties, processes of manufacture, installation procedures and performance. Construction methods, building systems and products will be evaluated. Materials will be analyzed and classified based on the Construction Specifications Institute Master Format. (Prerequisite: Accepted into Architectural; Corequisite: 10-801-136, English Composition 1)

10-614-214 BLDG GREEN INTRODUCTION ...summarizes the history, technology and science underlying sustainable building practices. The human factor and the economics of sustainability will be discussed. Alternative energy including wind, solar, photovoltaic, geothermal and fuel cells will be researched. (Prerequisite: Accepted into Architectural Technology program OR enrolled in Sustainable Design Certificate)

10-614-230 ARCHITECTURAL RESIDENTIAL ...emphasizes residential house styles, building codes, and design components related to the site and structure. Conceptual designs of single family residences will be planned collaboratively. Construction drawings will be produced using Autodesk design software. (Prerequisites: 10-614-210, Arch Principles; 10-614-211, Arch Revit Intro; 10-614-213, Bldg Materials; Corequisites: 10-614-231, Arch Revit Adv; 10-614-232, Struct Residential; 10-804-118, Interm Algebra w Apps; 10-614-212, Arch CAD Intro)

10-614-231 ARCHITECTURAL REVIT ADVANCED ...expands the implementation of additional features found in the parametric design software Autodesk Revit. Advanced modeling and documentation tools will be explored. More complex building information models will be generated, edited and documented. (Prerequisite: 10-614-211, Arch Revit Intro)

10-614-232 STRUCTURAL RESIDENTIAL ...highlights load distribution and coordination of structural components within residential buildings. Foundation systems, framing design and applicable codes will be examined. Various methods will be utilized to select members for use in structural drawings. (Prerequisites: 10-614-210 Archi Principles; 10-614-213, Bldg Materials; 10-614-212, Arch CAD Intro; Corequisites: 10-614-231, Arch Revit Adv; 10-804-118, Interm Algebra w Apps)

10-614-250 ARCHITECTURAL COMM STUDIO I ...outlines working drawing documentation and the construction process of commercial projects. Advanced building information modeling tools will be applied to a steel frame and masonry structure. Plans, elevations, sections and details will be generated. (Prerequisites: 10-614-230, Arch Residential; 10-614-231, Arch Revit Adv; Corequisite: 10-614-253, Struct Commercial)

10-614-251 BUILDING ESTIMATING ...applies mathematics and the knowledge of building materials to the art of blueprint interpretation. Residential and commercial construction plans will be referenced. Manual and computerized methods will be employed to complete material quantity surveys. (Prerequisites: 10-614-230, Arch Residential; 10-614-232, Struct Residential; 10-804-196, Trigonometry w Apps)

10-614-252 ARCHITECTURAL BUILDING SCIENCE ...relates fundamental concepts of physics to architectural design and building construction. Critical thinking will be necessary to perform various calculations. Physical properties of building materials and systems will be analyzed through demonstrations and experiments. (Prerequisites: 10-614-232, Struct Residential; 10-804-196, Trigonometry w Apps)

10-614-253 STRUCTURAL COMMERCIAL ...interprets information necessary to communicate the structural design of commercial buildings. Concrete, masonry and steel structural systems will be compared. Engineering sketches, industry manuals and computers will be utilized to prepare required details. (Prerequisites: 10-614-230, Arch Residential; 10-614-232, Struct Residential; 10-614-231, Arch Revit Adv; 10-614-212, Arch CAD Intro)

10-614-254 BUILDING GREEN RESIDENTIAL ...investigates basic sustainable design theory. The energy concepts of an extrinsically loaded house, natural building materials, and alternative technologies will be explored. Green building principles will be employed to design a home. (Prerequisites: 10-614-230, Arch Residential; 10-614-231, Arch Revit Adv; 10-614-214, Bldg Green Intro)

10-614-270 ARCH COMM STUDIO II ...integrates content from previous program courses while discovering the professional practice of architecture. Reinforced and precast concrete framed building structures will be highlighted. A set of commercial working drawings will be developed. (Prerequisites: 10-614-250, Arch Comm Studio I; 10-614-253, Struct Commerical)

10-614-271 STRUCTURAL ANALYSIS ...explains mathematical interaction between statics and strength of materials. Principles of structural theory will be applied to beam and column design. Basic calculations will be performed to relate concepts to actual wood member conditions. (Prerequisites: 10-804-195, College Algebra w Apps; 10-614-252, Arch Bldg Science)

10-614-272 BUILDING MEP SYSTEMS ...correlates the relationship between a building and its mechanical, electrical and plumbing systems. Codes, space requirements and specifications will be related to the building. MEP plans and necessary calculations will be prepared for a building. (Prerequisites: 10-614-212, Arch CAD Intro; 10-614-230, Arch Residential; 10-614-231, Arch Revit Adv)

10-614-273 BUILDING GREEN COMMERCIAL ...evaluates green building performance. Sustainable sites, energy, materials and day lighting will be considered. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System will be utilized to design an environmentally friendly building. (Prerequisites: 10-614-250, Arch Comm Studio I; 10-614-254, Bldg Green Res)

Auto Collision Repair and Refinishing Technician

Program Code 324051
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Auto Collision Repair and Refinishing Technician two-year program prepares learners to repair and refinish damaged bodies and parts of automobiles and light trucks.

Program Outcomes
- Straighten damaged autobody sheetmetal.
- Repair plastic and composite body parts.
- Refinish automobile body parts.
- Repair and replace stationary glass.
- Repair damaged automobile and light truck frames.
- Repair unibody structural damage.
- Estimate collision damage repair costs.
- Demonstrate auto collision welding procedures.
- Repair manual and passive restraint systems.
- Diagnose problems in automotive electrical, electronic, and mechanical systems.
- Repair steering and suspension systems.
- Qualify for Automotive Service Excellence Autobody and Paint Certification Exam.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and technology education.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 68; Arithmetic: 55; Sentence Skills: 73. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Associations
- National Institute for Automotive Service Excellence
- Wisconsin Auto Collision Technicians Association
- Bay Auto Body Association
- National Auto Body Congress
- Collision Repair Instructors Network

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Auto Collision Repair Technician: Repairs damaged bodies of cars and light trucks; removes damaged panels and welds in new ones; removes and replaces accessories, glass, electrical parts, and interior trim; repairs or replaces plastic or composite parts; and straightens dents in sheet metal panels to restore the vehicle to pre-accident condition.

Auto Collision Refinishing Technician: Completes the refinishing phase of all repairs on cars, trucks, and fleet vehicles; does all stages of priming, sanding and sealing prior to the paint application; determines the type and color of paint to do the refinishing; is familiar with mixing, tinting, and shading; as well as the application of color for matching; and buffs, polishes, stripes, and details vehicle to complete the repair job.

Frame and Alignment Technician: Straightens, welds, replaces, and aligns all types of frames and suspensions of cars and trucks to restore them to factory specifications.

Unibody Repair Specialist: Repairs unitized vehicles by analyzing, measuring, and pulling the unibody structure to the proper dimensions; and replaces structural parts that are not repairable using proper structural parts-sectioning techniques to return the vehicle to factory specifications.

Trim and Glass Installer: Removes, replaces, or repairs all types of glass or glass-related problems on vehicles.

Accreditation
- NATEF (National Automotive Technicians Education Foundation) Certified Program
- I-CAR Automotive Steel GMA (MIG) Welding Qualification Test Administrators.
- I-CAR Industry Training Alliance Member
- National Glass Association (NGA) continuing education provider.

Credentials
All NWTC Auto Collision programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Auto Collision programs are at a minimum, Master, ASE Certified Technicians.

NWTC Auto Collision Program National Award: The Northeast Wisconsin Technical College Auto Collision Repair and Refinishing Program received a National Award of Excellence from the Auto Industry Planning Council (AIPC) in 2006.

Curriculum
The Auto Collision Repair and Refinishing Technician Technical Diploma is a two-year program. Upon graduation, a student will have completed 59 credits. The two NWTC Auto Collision, Repair and Refinishing programs are organized in a "series" of courses. The two series are: Repair and Refinishing. Both series of courses must be completed in whichever program (associate degree or technical diploma) the student elects to pursue. A student can start in either program (associate degree or technical diploma) at the beginning of either series of classes or when prerequisites are fulfilled.

AUTO COLLISION REFINISHING FIRST SERIES
Catalog No.	Description	Credits
10-405-101	Intro to Auto Refinishing	2
10-405-106	Plastics and Composites	1
10-405-107	Coll Refinish Surface Prep	2
10-405-108	Coll Refinish Topcoat Appl	3
10-804-107	College Mathematics	3
31-801-386	Communicating Effectively	1
	TOTAL CREDITS	12

AUTO COLLISION REFINISHING SECOND SERIES
Catalog No.	Description	Credits
10-405-109	Coll Refinish Tint and Blend	2
10-405-110	Coll Refinishing Advanced	3
10-405-147	Auto Refinish Prod Emmissions	1
10-809-166	Intro to Ethics: Theory & App	3
10-809-197	Contemporary Amer Society	3
31-801-385	Communicating-Writing	1
32-405-320	Auto Collision Ind Shadow	1
	TOTAL CREDITS	14

AUTO COLLISION REPAIR FIRST SERIES
Catalog No.	Description	Credits
10-405-100	Intro to Collision Repair	2
10-405-102	Coll Repair Non Structural 1	2
10-405-103	Coll Repair Non Structural 2	2
10-405-104	Coll Repair Non Structual 3	2
10-405-105	Coll Repair Non Structural 4	2
10-405-114	Coll Repair Estimating	1
10-405-120	Coll Repair Mech HVAC	2
10-405-128	Coll Repair Electrical Sys SRS	1
10-405-144	Collision Repair Welding 1	2
10-602-125	Electrical and Electronic Syst	2
	TOTAL CREDITS	18

AUTO COLLISION REPAIR SECOND SERIES
Catalog No.	Description	Credits
10-405-111	Coll Repair Structural 1	3
10-405-112	Coll Repair Structural 2	3
10-405-113	Coll Repair Structural 3	2
10-405-122	Coll Rep Brakes, Drive Train	2
10-405-146	Coll Repair Welding 2	2
10-602-124	Steering and Suspension System	3
	TOTAL CREDITS	15
	TOTAL PROGRAM CREDITS	59

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-405-100 INTRODUCTION TO COLLISION REPAIR ...industry professionalism, career opportunities and certifications, personal and shop safety, collision repair industry terms and definitions, sheet metal characteristics and analysis use of basic hand and power tools, identifying and using collision repair information and procedures, and basic repair procedures for minor collision damage.

10-405-101 INTRODUCTION TO AUTOMOTIVE REFINISHING ...industry career opportunities and certifications, refinishing safety and environmental regulations, automotive paints, and paint application equipment.

10-405-102 COLLISION REPAIR NON STRUCTURAL 1 ...removal, replacement, and storage of interior and exterior trim, disarming, arming restraint systems, adjustment to movable glass, lamps, bumpers and moveable tops, and wind noise/water leak diagnosis and repair. (Prerequisite: 10-405-100 Intro to Collision Repair)

10-405-103 COLLISION REPAIR NON STRUCTURAL 2 ...identifying different types of vehicle construction, non structural part identification, damage analysis and developing a repair plan, time management, and replacing and aligning bolted and moveable exterior panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1)

10-405-104 COLLISION REPAIR NON STRUCTURAL 3 ...repair sequences and processes for straightening more complex types of collision damage to nonstructural vehicle panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2)

10-405-105 COLLISION REPAIR NON STRUCTURAL 4 ...removal and application of sealers, undercoats, corrosion protection and various types of foams, replacing non structural vehicle panels using panel bonding and welding, and repairing aluminum exterior panels. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2; 10-405-104 Collision Repair Non Structual 3)

10-405-106 PLASTICS AND COMPOSITES ...identifying types of plastic used on vehicles, making repair or replace decisions, repair techniques using plastic welding equipment and adhesives, and refinishing techniques and materials (Corequisite: 10-405-101 Introduction to Automotive Refinishing)

10-405-107 COLLISION REFINISHING SURFACE PREPARATIONS ...planning the refinishing process including substrate identification, paint and rust removal, panel cleaning, selecting proper sandpaper, sanding techniques, vehicle protection, masking techniques, selecting and applying the correct undercoats, and corrosion protection products and usage. (Corequisite: 10-405-101 Introduction to Automotive Refinishing)

10-405-108 COLLISION REFINISHING TOPCOAT APPLICATION ...locating and mixing automotive color formulas, applying sealers, single-stage, and basecoat/ clearcoat finishes, optimizing transfer efficiency, and blending adjacent vehicle panels. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-107 Coll Refinish Surface Prep)

10-405-109 COLLISION REFINISHING TINTING AND BLENDING ...advanced spray gun setup considerations & techniques, using blending additives. Also included is an in-depth study of color theory, color movement, color evaluation, and color adjustment tools and techniques. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-106 Plastics and Composites; 10-405-107 Coll Refinish Surface Prep; 10-405-108 Coll Refinish Topcoat Appl)

10-405-110 COLLISION REFINISHING ADVANCED ...application and blending of automotive multistage finishes, and use of waterborne refinishing materials. Refinishing defect identification, diagnosis, and repair is also covered with emphasis placed on learning how to avoid defects while refinishing. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-107 Coll Refinish Surface Prep; 10-405-108 Coll Refinish Topcoat Appl; 10-405-109 Coll Refinish Tint and Blend)

10-405-111 COLLISION REPAIR STRUCTURAL 1 ...understanding collision forces, performing inspections of automotive structural components, and determine the extent of structural damage using measuring equipment. (Prerequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Collision Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2; 10-405-104 Collision Repair Non Structural 3; 10-405-105 Collision Repair Non Structural 4)

10-405-112 COLLISION REPAIR STRUCTURAL 2 ...utilizing anchoring and pulling equipment for straightening, realigning, replacing and sectioning unibody structural components, sections, and other vehicle outer panels. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, replacing corrosion protection, and stationary glass replacement. (Prerequisites: Completion of 1st semester courses; Corequisite: 10-405-146 Collision Repair Welding 2; 10-405-111 Collision Repair Structual 1)

10-405-113 COLLISION REPAIR STRUCTURAL 3 ...utilizing, anchoring and pulling equipment for straightening, realigning, replacing and sectioning full-frame structural components. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, corrosion protection, and stationary glass replacement. (Prerequisites: Completion of 1st semester courses; Corequisite: 10-405-146 Collision Repair Welding 2; 10-405-111 Collision Repair Structual 1; 10-405-112 Coll Repair Structural 2)

10-405-114 COLLISION REPAIR ESTIMATING ...vehicle construction, model identification, damage analysis, parts sources, handwritten damage reports, computerized damage reports, and shop management.

10-405-120 COLLISION REPAIR MECHANICAL HVAC ...locating, identifying, inspecting, testing and repairing or replacing both heating and cooling system components. Students also diagnose both heating and cooling systems for leaks, belt and pulley alignment and safely identify, label, store, evacuate, recharge, replace and recycle coolants and refrigerants in accordance with EPA regulations.

10-405-122 COLLISION REPAIR BRAKES, DRIVE TRAIN AND FUEL ...locating, identifying, inspecting, diagnosing, repairing or replacing collision damaged brake system, drive train, fuel, and emission system components.

10-405-128 COLLISION REPAIR ELECTRICAL SYSTEMS SRS ...operation, troubleshooting, diagnosis, and repair of restraint and supplemental restraint systems. (Corequisite: 10-602-125 Electrical and Electronic Systems)

10-405-144 COLLISION REPAIR WELDING 1 ...welding safety; introduction to the GMAW (MIG) welding process and equipment; and skills training in GMAW (MIG) welding on light gauge automotive steels.

10-405-146 COLLISION REPAIR WELDING 2 ...oxy acetylene and plasma arc cutting, GMAW (MIG) welding on structural grade automotive steels. Squeeze type resistance spot welding (STRSW), welding aluminum, and silicone bronze is also introduced to students in this course. (Prerequisite: 10-405-144 Collision Repair Welding 1)

10-405-147 AUTO REFINISHING, PRODUCTIVITY & EMISSIONS..confined damage repair techniques, improving cycle time during refinishing, EPA requirements for refinishing technicians, and reducing VOC emissions during the refinishing process. (Corequisites: 10-405-109 Coll Refinish Tint and Blend; 10-405-110 Coll Refinishing Advanced)

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS ...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

32-405-320 AUTO COLLISION INDUSTRY SHADOWING ...an opportunity to experience the auto collision industry working environment. Course will facilitate student's opportunities to meet technicians and shop owners, and to observe all facets of the industry.

Auto Collision Repair and Refinishing Technology
Program Code 104051
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
This two-year program provides all the required technical training that the technical diploma offers. It also provides the student with the opportunity to pursue a supervisory or management career, to pursue an automotive industry related career, and to transfer credit to a four-year college.

Program Outcomes
- Straighten damaged autobody sheetmetal.
- Repair Plastic and composite body parts.
- Repair and replace stationary glass.
- Repair damaged automobile and light truck frames.
- Refinish automobile body parts.
- Explore Custom Painting.
- Repair unibody structural damage.
- Estimate collision damage repair costs.
- Demonstrate Auto Collision welding procedures.
- Repair manual and passive restraint systems.
- Diagnose problems in automotive electrical, electronic, and mechanical systems.
- Repair steering and suspension systems.
- Qualify for Automotive Service Excellence Autobody and Paint Certification Exam.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and technology education.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34, Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Along with technical diploma employment opportunities, a graduate of this program will have the potential for employment in the following areas also:

Insurance Adjuster/Appraiser: Works closely with collision repair facilities to negotiate repair procedures and repair costs.

Collision Center Owner: Owns and operates their own collision repair facility. May have several employees working for them.

Collision Center Manager: Oversees all aspects of the collision center operation; including writing estimates, working with insurance companies, and managing employees.

Manufacturers Representative: Represents various manufacturers of paint and body supplies in either sales or as a technical representative.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Tech-Ed Teacher
- Collision Repair and Refinishing Instructor
- Automotive Engineer
- Insurance Adjuster or Appraiser

Accreditation
- NATEF (National Automotive Technicians Education Foundation) Certified Program
- I-CAR Automotive Steel GMA (MIG) Welding Qualification Test Administrators.
- I-CAR Industry Training Alliance Member
- National Glass Association (NGA) continuing education provider.

Associations
- National Institute for Automotive Service Excellence
- Wisconsin Auto Collision Technicians Association
- Bay Auto Body Association
- National Auto Body Congress
- Collision Repair Instructors Network

Credentials
All NWTC Auto Collision programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Auto Collision Programs are, at a minimum, Master, ASE Certified Technicians.

NWTC Auto Collision Program National Award: The Northeast Wisconsin Technical College Auto Collision Repair and Refinishing Program received a National Award of Excellence from the Auto Industry Planning Council (AIPC) in 2006.

Curriculum
The Auto Collision Repair and Refinish Technology Associate Degree is a two-year program. Upon graduation, a student will have completed 70 credits. The two NWTC Auto Collision, Repair and Refinishing programs are organized in "series" of courses. The two series are: Repair and Refinishing. Both series of courses must be completed in whichever program (associate degree or technical diploma) the student elects to pursue. A student can start in either program (associate degree or technical diploma) at the beginning of either series of classes or when prerequisites are fulfilled.

AUTO COLLISION REFINISHING FIRST SERIES
Catalog No.	Description	Credits
10-405-101	Intro to Auto Refinishing	2
10-405-106	Plastics and Composites	1
10-405-107	Coll Refinish Surface Prep	2
10-405-108	Coll Refinish Topcoat Appl	3
10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
10-809-197	Contemporary Amer Society	3
	TOTAL CREDITS	17

AUTO COLLISION REFINISHING SECOND SERIES
10-405-109	Coll Refinish Tint and Blend	2
10-405-110	Coll Refinishing Advanced	3
10-405-147	Auto Refinish Prod Emmissions	1
10-405-148	Auto Refinish Custom	1
10-405-149	Auto Coll, Business Practice	1
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
	TOTAL CREDITS	17

AUTO COLLISION REPAIR FIRST SERIES
10-405-100	Intro to Collision Repair	2
10-405-102	Coll Repair Non Structural 1	2
10-405-103	Coll Repair Non Structural 2	2
10-405-104	Coll Repair Non Structual 3	2
10-405-105	Coll Repair Non Structural 4	2
10-405-114	Coll Repair Estimating	1
10-405-120	Coll Repair Mech HVAC	2
10-405-128	Coll Repair Electrical Sys SRS	1
10-405-144	Collision Repair Welding 1	2
10-602-125	Electrical and Electronic Syst	2
	TOTAL CREDITS	18

AUTO COLLISION REPAIR SECOND SERIES
10-405-111	Coll Repair Structural 1	3
10-405-112	Coll Repair Structural 2	3
10-405-113	Coll Repair Structural 3	2
10-405-122	Coll Rep Brakes, Drive Train	2
10-405-146	Coll Repair Welding 2	2
10-602-124	Steering and Suspension System	3
10-809-199	Psychology Of Human Relations	3
	TOTAL CREDITS	18
	TOTAL PROGRAM CREDITS	70

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-405-100 INTRODUCTION TO COLLISION REPAIR ...industry professionalism, career opportunities and certifications, personal and shop safety, collision repair industry terms and definitions, sheet metal characteristics and analysis, use of basic hand and power tools, identifying and using collision repair information and procedures, and basic repair procedures for minor collision damage.

10-405-101 INTRODUCTION TO AUTOMOTIVE REFINISHING ...industry career opportunities and certifications, refinishing safety and environmental regulations, automotive paints, and paint application equipment.

10-405-102 COLLISION REPAIR NON STRUCTURAL 1 ...removal, replacement, and storage of interior and exterior trim, disarming, arming restraint systems, adjustment to movable glass, lamps, bumpers and moveable tops, and wind noise/water leak diagnosis and repair. (Prerequisite: 10-405-100 Intro to Collision Repair)

10-405-103 COLLISION REPAIR NON STRUCTURAL 2 ...identifying different types of vehicle construction, non structural part identification, damage analysis and developing a repair plan, time management, and replacing and aligning bolted and moveable exterior panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1)

10-405-104 COLLISION REPAIR NON STRUCTURAL 3 ...repair sequences and processes for straightening more complex types of collision damage to nonstructural vehicle panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2)

10-405-105 COLLISION REPAIR NON STRUCTURAL 4 ...removal and application of sealers, undercoats, corrosion protection and various types of foams, replacing non structural vehicle panels using panel bonding and welding, and repairing aluminum exterior panels. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2; 10-405-104 Collision Repair Non Structural 3)

10-405-106 PLASTICS AND COMPOSITES ...identifying types of plastic used on vehicles, making repair or replace decisions, repair techniques using plastic welding equipment and adhesives, and refinishing techniques and materials (Corequisite: 10-405-101 Introduction to Automotive Refinishing)

10-405-107 COLLISION REFINISHING SURFACE PREPARATIONS ...planning the refinishing process including substrate identification, paint and rust removal, panel cleaning, selecting proper sandpaper, sanding techniques, vehicle protection, masking techniques, selecting and applying the correct undercoats, and corrosion protection products and usage. (Corequisite: 10-405-101 Introduction to Automotive Refinishing)

10-405-108 COLLISION REFINISHING TOPCOAT APPLICATION ...locating and mixing automotive color formulas, applying sealers, single-stage, and basecoat/clearcoat finishes, optimizing transfer efficiency, and blending adjacent vehicle panels. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-107 Coll Refinish Surface Prep)

10-405-109 COLLISION REFINISHING TINTING AND BLENDING ...advanced spray gun setup considerations & techniques, using blending additives. Also included is an in-depth study of color theory, color movement, color evaluation, and color adjustment tools and techniques. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-106 Plastics and Composites; 10-405-107 Coll Refinish Surface Prep; 10-405-108 Coll Refinish Topcoat Appl)

10-405-110 COLLISION REFINISHING ADVANCED ...application and blending of automotive multistage finishes, and use of waterborne refinishing materials. Refinishing defect identification, diagnosis, and repair is also covered with emphasis placed on learning how to avoid defects while refinishing. (Prerequisites: 10-405-101 Intro to Auto Refinishing; 10-405-107 Coll Refinish Surface Prep; 10-405-108 Coll Refinish Topcoat Appl; 10-405-109 Coll Refinish Tint and Blend)

10-405-111 COLLISION REPAIR STRUCTURAL 1 ...understanding collision forces, performing inspections of automotive structural components, and determine the extent of structural damage using measuring equipment. (Prerequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Collision Repair Non Structural 1; 10-405-103 Collision Repair Non Structural 2; 10-405-104 Collision Repair Non Structural 3; 10-405-105 Collision Repair Non Structural 4)

10-405-112 COLLISION REPAIR STRUCTURAL 2 ...utilizing anchoring and pulling equipment for straightening, realigning, replacing and sectioning unibody structural components, sections, and other vehicle outer panels. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, replacing corrosion protection, and stationary glass replacement. (Prerequisites: Completion of 1st semester courses; Corequisite: 10-405-146 Collision Repair Welding 2; 10-405-111 Collision Repair Structal 1)

10-405-113 COLLISION REPAIR STRUCTURAL 3 ...utilizing, anchoring and pulling equipment for straightening, realigning, replacing and sectioning full-frame structural components. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, corrosion protection, and stationary glass replacement. (Prerequisites: Completion of 1st semester courses; Corequisite: 10-405-146 Collision Repair Welding 2; 10-405-111 Collision Repair Structal 1; 10-405-112 Coll Repair Structural 2)

10-405-114 COLLISION REPAIR ESTIMATING ...vehicle construction, model identification, damage analysis, parts sources, handwritten damage reports, computerized damage reports, and shop management.

10-405-120 COLLISION REPAIR MECHANICAL HVAC ...locating, identifying, inspecting, testing and repairing or replacing both heating and cooling system components. Students also diagnose both heating and cooling systems for leaks, belt and pulley alignment and safely identify, label, store, evacuate, recharge, replace and recycle coolants and refrigerants in accordance with EPA regulations.

10-405-122 COLLISION REPAIR BRAKES, DRIVE TRAIN AND FUEL ...locating, identifying, inspecting, diagnosing, repairing or replacing collision damaged brake system, drive train, fuel, and emission system components.

10-405-128 COLLISION REPAIR ELECTRICAL SYSTEMS SRS ...operation, troubleshooting, diagnosis, and repair of restraint and supplemental restraint systems. (Corequisite: 10-602-125 Electrical and Electronic Systems)

10-405-144 COLLISION REPAIR WELDING 1 ...welding safety; introduction to the GMAW (MIG) welding process and equipment; and skills training in GMAW (MIG) welding on light gauge automotive steels.

10-405-146 COLLISION REPAIR WELDING 2 ...oxy acetylene and plasma arc cutting, GMAW (MIG) welding on structural grade automotive steels. Squeeze type resistance spot welding (STRSW), welding aluminum, and silicone bronze is also introduced to students in this course. (Prerequisite: 10-405-144 Collision Repair Welding 1)

10-405-147 AUTO REFINISHING, PRODUCTIVITY & EMISSIONS ...confined damage repair techniques, improving cycle time during refinishing, EPA requirements for refinishing technicians, and reducing VOC emissions during the refinishing process. (Corequisites: 10-405-109 Coll Refinish Tint and Blend; 10-405-110 Coll Refinishing Advanced)

10-405-148 AUTO REFINISHING, CUSTOM FINISHES & GRAPHICS ...this course provides the opportunity for the learner to develop the knowledge skills process and understanding of using airbrushes, mixing and applying specialty refinish coatings such as candies, flakes, and marbilizers, custom design techniques, and application of adhesive style striping and graphics. An introduction to applying painted pinstripes will also be included. (Corequisites: 10-405-109 Coll Refinish Tint and Blend; 10-405-110 Coll Refinishing Advanced; 10-405-147 Auto Refinish Prod Emmissions)

10-405-149 AUTO COLLISION, BUSINESS PRACTICE/ENTREPENEURSHIP ...collision repair facility operations from a business standpoint, including office management, record keeping, business ethics, and cycle time efficiency are discussed. How to plan for opening a collision repair facility is also introduced.

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS ...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

Automation Engineering Technology

Program Code 106641
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Automation Engineering Technology program responds to industry's need for system-level technicians who can work with integrated machine systems that might involve industrial automation, robotics, mechanics, computers, industrial communications and/or electronics technology. These technicians are in high demand to coordinate the higher end control platforms and networking that support automated mechanical systems.

Program Outcomes
- Understand and apply knowledge of electricity, electronics and motors to industrial applications.
- Read and interpret technical specifications, detail and assembly drawings, schematics, and diagrams for machine control.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Analyze electrical, mechanical, fluid control functions for proper machine programming and operation.
- Apply a variety of programming languages to the control of single manufacturing cells, programmable controllers, computer networks, industrial networks and information systems using a dynamic data exchange.
- Construct ladder diagrams, flow charts, timing diagrams, and basic computer control algorithms for machine control.
- Understand and apply computer hardware/software applications to industrial systems.
- Apply diagnostic tools to troubleshoot and resolve system problems.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:
- Controls Designer
- Automation Technician
- Controls Technician
- Engineering Technician
- Controls Engineer in Training
- Automation Engineer in Training

The following certificates/technical diplomas may be applied toward this program:
904621, Industrial Maintenance

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Automation Engineering Technology on the College Math assessment is 50.
- Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

SUGGESTED ELECTIVES
Fluids 3: Inter Hydraulics, 10-620-165
Fluids 4: Adv Hydraulics, 10-620-166
Mechanics 1: Basic, 10-620-121
Mechanics 2: Intermediate, 10-620-122
Mechanics 3: Systems, 10-620-123

Curriculum
The Automation Engineering Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 62 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
	Elective	1
	SEMESTER TOTAL	16

SECOND SEMESTER
Catalog No.	Description	Credits
10-620-140	Machine Wiring and Safety	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-660-111	Electronics 2: Trans-Basic	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
	Elective	1
	SEMESTER TOTAL	15

THIRD SEMESTER
Catalog No.	Description	Credits
10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-664-105	Automation 6: PLC	1
10-664-109	Automation CAD 1	1
10-664-110	Automation CAD 2	1
10-664-151	Automation 8: HMI	1
10-664-152	Automation 9: HMI	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
10-620-170	Robotics - Introduction to	1
10-664-150	Automation 7: PLC	1
10-664-153	Automation 10: Network	1
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-664-189	Automation Systems Integration	3
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	62

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of industrial DC and AC drives to DC and AC motors. (Corequisite: 10-605-157, Power Electronics 1: Devices)

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, compound DC, AC induction, and specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of Industrial Robots. (Prerequisite: 10-664-160, Control 1: Discrete Systems OR 10-605-165, Micro 3: Interfaces)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Corequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC System, applying event sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-109 AUTOMATION CAD 1 ...computer aided drawing packages specifically focused on the development and modification of electrical schematics utilized for controls of manufacturing equipment.

10-664-110 AUTOMATION CAD 2 ...in-depth investigation of more advanced functons and capabilities of CAD electrical drawing package.

10-664-150 AUTOMATION 7: PLC ...timers, counters, and math instruction applications, creation of a function block program structure via written specification, and modification of existing PLC program to enhance operation utilizing advanced programming functions. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Prerequisite: 10-664-105, Automation 6: PLC)

10-664-152 AUTOMATION 9: HMI ...advanced functions of Operator Interface Terminals, differentiation between Human Machine Interface and Operator Interface Terminal, basic setup, generation of PLC program, tags, and screen objects for Human Machine Interface system. (Corequisite: 10-664-151, Automation 8: HMI)

10-664-153 AUTOMATION 10: NETWORK ...industrial networks used in today's manufacturing environment and their foundation, proper system hardware of an industrial network installation, and use of an industrial network to communicate data via Industrial Ethernet. (Corequisite: 10-664-152, Automation 9: HMI)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC drive system performance, specification of AC and DC drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Prerequisite: 10-664-164, Control 5: Servo Systems)

10-664-189 AUTOMATION SYSTEMS INTEGRATION ...coordination and application of automation technologies into an integrated and automated manufacturing system. (Prerequisites: Completion of 3rd semester coursework; 10-620-101, Fluids 2: Basic Hydraulics)

Automotive Technician

Program Code 324042
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description

Automotive Technician prepares students for work in an automotive service department. Students learn to repair and service all mechanical parts of the automobile under conditions similar to those in an actual repair facility.

Program Outcomes

Automotive Technician graduates will demonstrate technical aptitude and proficiency by diagnosis and repair of the following ASE service areas:
- A1 Engine Repair
- A2 Automatic Transmission/Transaxle
- A3 Manual Drive train & Axle
- A4 Suspension & Steering
- A5 Brakes
- A6 Electric/electronic Systems
- A7 Heating & A/C
- A8 Engine Performance

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- NWTC Academic Skills Assessment or equivalent. (See Academic Skills Assessment section for details and equivalents.)
- High school background in mathematics, science, and technology education.
- Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 41; Sentence Skills: 73. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Automotive Service Technician: Diagnoses vehicle malfunctions, performs appropriate repairs, and recommends/conducts regular vehicle maintenance.

Automotive Electronics Specialist: Utilizes Hi-tech equipment to troubleshoot complex electrical and computer malfunctions. Replaces and reprograms engine, body and transmission controllers.

Brake Specialist: Performs complete brake system safety inspections, diagnoses brake system concerns and makes necessary repairs.

Steering, Suspension & Alignment Specialist: Diagnoses and repairs steering and suspension system concerns, utilizes computerized equipment to perform suspension and steering system adjustments.

Transmission and Drive Train Specialist: Diagnoses and repairs concerns related to automatic and manual transmissions, drive trains and differentials.

Engine Performance Specialist: Utilizes hi-tech equipment to diagnose and repair engine drivability concerns relating to engine mechanical, ignition and fuel systems.

Heating & Air Conditioning Specialist: Diagnoses and repairs heating and air conditioning control systems.

Engine Repair Specialist: Diagnoses engine mechanical failure, disassembles, inspects, and measures engine components, recommends/conducts component replacement.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Shop Supervisor
- Specialty Technician
- Fleet Dispatcher
- Specialty Repair Shop Owner
- Automotive Instructor

Accreditation

- All NWTC Automotive programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards.
- All instructional staff in the NWTC Automotive Programs are, at a minimum, Master, ASE Certified Technicians.
- NATEF (National Automotive Technicians Education Foundation)

We support:

Curriculum

The Automotive Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 59 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-602-103	Engine Repair 1	2
10-602-104	Brake Systems	3
10-602-107	Auto Service Fundamentals	2
10-602-124	Steering and Suspension System	3
10-602-125	Electrical and Electronic Syst	2
31-442-350	Welding-Machine Trades	2
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	15

SECOND SEMESTER

Catalog No.	Description	Credits
10-602-127	Electrical and Electronic Sys	3
10-602-195	Advanced Chassis Systems	2
10-602-197	Engine Performance 1	3
10-602-198	Engine Performance 2	4
10-602-199	Alternative Fuels Technology	1
10-804-107	College Mathematics	3
	SEMESTER TOTAL	16

THIRD SEMESTER

Catalog No.	Description	Credits
10-602-123	Engine Repair 2	3
10-602-128	Electrical and Electronic Sys	3
10-602-196	Automotive Climate Control Sys	3
10-602-200	Diesel Fuel Technology	1
10-602-201	Vehicle Computer Controlled Sy	1
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	14

FOURTH SEMESTER

Catalog No.	Description	Credits
10-602-109	Auto Transmission/Transaxle	4
10-602-149	Manual Drive Train and Axles	4
10-602-150	Automotive Certification Prep	1
10-602-202	Advanced Vehicle Man Tech	3
10-602-203	Vehicle Body Mechanical Svc	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	14
	TOTAL CREDITS	59

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-602-103 ENGINE REPAIR 1 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on in-vehicle repairs including engine cooling and lubrications. (Corequisite: 10-602-107, Automotive Service Fundamentals)

10-602-104 BRAKE SYSTEMS ...develop the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.) (Corequisite: 10-602-107, Automotive Service Fundamentals)

10-602-107 AUTOMOTIVE SERVICE FUNDAMENTALS ...safety and the use of basic hand/power tools in accordance with industry standards. Introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services.

10-602-109 AUTOMATIC TRANSMISSION/TRANSAXLE ...develop the skills needed to diagnose, service and repair automatic transmission/transaxles including overhaul procedures. (Prerequisite: 10-602-127, Electrical and Electronic Systems 2)

10-602-123 ENGINE REPAIR 2 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on out-of-vehicle engine repair including overhaul procedures. (Prerequisite: 10-602-103, Engine Repair 1.)

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS ...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-127 ELECTRICAL AND ELECTRONIC SYSTEMS 2 ...develop the skills needed to diagnose, service and repair electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems. (Prerequisite: 10-602-125 Electrical and Electronic Systems 1)

10-602-128 ELECTRICAL AND ELECTRONIC SYSTEMS 3 ...develop the skills needed to diagnose, service and repair electrical and electronic systems including driver information, horn, wiper/washer, power accessories, cruise control, air bag, antitheft and radio systems.

10-602-149 MANUAL DRIVE TRAIN AND AXLES ...develop the skills needed to diagnose, service and repair clutches, manual transmissions/transaxle, differentials, four wheel drive/all wheel drive, and drive axles. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-150 AUTOMOTIVE CERTIFICATION PREPARATION ...this course provides an opportunity for students to develop the knowledge, skills and understanding required to successfully complete the Automotive Technician certification test.

10-602-195 ADVANCED CHASSIS SYSTEMS ...develop the skills needed to diagnose, service and repair antilock brake, vehicle stability enhancement, and electronic steering and suspension system. (Prerequisites/Corequisites: 10-602-104 Break Systems; 10-602-124 Steering and Suspension System; 10-602-125 Electrical and Electronic Syst)

10-602-196 AUTOMOTIVE CLIMATE CONTROL SYSTEMS ...develop the skills needed to diagnose, service and repair climate control systems including heating, cooling, and air distribution. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-197 ENGINE PERFORMANCE 1 ...develop the skills needed to diagnose, service and repair powertrain control and ignition systems. Emphasis on diagnostic procedures and the problem-solving techniques associated with automotive engine performance and drivability. (Prerequisite: 10-602-103 Engine Repair 1; Corequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-198 ENGINE PERFORMANCE 2 ...develop the skills needed to diagnose, service and repair fuel and emission control systems. Emphasis on diagnostic procedures, problem-solving techniques associated with automotive engine performance and drivability. (Corequisite: 10-602-197 Engine Performance 1)

10-602-199 ALTERNATIVE FUELS TECHNOLOGY ...develop the knowledge, skills, process, and understanding of Compressed Natural Gas (CNG) Systems, Automotive Hybrid Vehicles, Automotive Hybrid Safety and Emergency Response and Fuel Cells.

10-602-200 DIESEL FUEL TECHNOLOGY ...develop the knowledge, skills, process, and understanding of automotive diesel fuels diesel fuel system components, diesel fuel system testing and diesel engine operation. (Prerequisite: 10-602-199 Alternative Fuels Technology)

10-602-201 VEHICLE COMPUTER CONTROLLED SYSTEMS ...develop the knowledge skills process and understanding of related electronic module sensor/switch testing, input/output date interpretation and testing components with scanner/lab scope testers. (Corequisite: 10-602-128 Electrical and Electronic Systems 3)

10-602-202 ADVANCED VEHICLE MANUFACTURE TECHNOLOGY ...diagnose, service and repair intermittent drivability concerns, monitoring live PID data with scanner, graphing data with lab scope, fuel injection monitoring with scanner, graphing fuel injectors with lab scope, performing diagnostic snapshot/recordings of live vehicle data, and playing back the recorded data to isolate the concern. (Prerequisites: 10-602-198, Engine Performance 2; 10-602-128 Electrical and Electronic Systems 3)

10-602-203 VEHICLE BODY MECHANICAL SERVICE ...knowledge, skills, process, and understanding of internal door components/moveable glass, body opening adjustments, exterior body components, seat removal/repair, sunroof repair, wind noise diagnosis, water leak diagnosis, and interior trim.

31-442-350 WELDING-MACHINE TRADES ...oxyacetylene welding, brazing, soldering; cutting, hardsurfacing, out-of-position welding, arc welding of machines/accessories, running beads, types of joints, welding thin gauge, arc cutting, and heating.

Automotive Technology
Program Code 106023
Associate Degree

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Automotive Technology prepares students for work in an automotive repair facility. Students learn to diagnose and service automobiles under conditions similar to an actual repair facility. Students will develop repair facility management skills such as telephone etiquette, communication techniques, operation, managing, and organization skills.

Program Outcomes
Automotive Technology graduates will demonstrate technical aptitude and proficiency by diagnosis and repair of the following ASE service areas:
- A1 Engine Repair
- A2 Automatic Transmission/Transaxle
- A3 Manual Drive train & Axle
- A4 Suspension & Steering
- A5 Brakes
- A6 Electric/electronic Systems
- A7 Heating & A/C
- A8 Engine Performance

In addition, graduates will also be able to:
- Communicate positively and effectively with the customer
- Create and complete customer repair orders accurately
- Organize a daily work schedule for him/ herself and for team members
- Tabulate a daily time sheet of technicians repair work

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and technology education.
- Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 75; Arithmetic: 41; Sentence Skills: 73. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Automotive Service Technician: Diagnoses vehicle malfunctions, performs appropriate repairs, and recommends/conducts regular vehicle maintenance.

Automotive Electronics Specialist: Utilizes Hi-tech equipment to troubleshoot complex electrical and computer malfunctions. Replaces and reprograms engine, body and transmission controllers.

Brake Specialist: Performs complete brake system safety inspections, diagnoses brake system concerns and makes necessary repairs.

Steering, Suspension & Alignment Specialist: Diagnoses and repairs steering and suspension system concerns, utilizes computerized equipment to perform suspension and steering system adjustments.

Transmission and Drive Train Specialist: Diagnoses and repairs concerns related to automatic and manual transmissions, drive trains and differentials.

Engine Performance Specialist: Utilizes hi-tech equipment to diagnose and repair engine drivability concerns relating to engine mechanical, ignition and fuel systems.

Heating & Air Conditioning Specialist: Diagnoses and repairs heating and air conditioning control systems.

Engine Repair Specialist: Diagnoses engine mechanical failure. Disassembles, inspects, and measures engine components. Recommends/ conducts component replacement.

Shop Foreman: Works with the technician and customer to get vehicles repaired correctly.

Parts Manager: Organizes and oversees the parts department. Works with the technicians to get the correct parts to repair the vehicles.

Warranty Claims Person: Calculates the amount of time spent repairing a vehicle compared to what the manufacturer will allow.

Owner/Operator: Owns and operates his/her own repair facility, may have employees working for them.

Accreditation
- All NWTC Automotive programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards.
- All instructional staff in the NWTC Automotive Programs are, at a minimum, Master, ASE Certified Technicians.
- NATEF (National Automotive Technicians Education Foundation)

We support:

Curriculum
The Automotive Technology Associate Degree is a two-year, four-semester program offered on both the Green Bay and Marinette Campuses. Upon graduation, a student will have completed 70 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-602-103	Engine Repair 1	2
10-602-104	Brake Systems	3
10-602-107	Auto Service Fundamentals	2
10-602-124	Steering and Suspension System	3
10-602-125	Electrical and Electronic Syst	2
10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
	SEMESTER TOTAL	18

SECOND SEMESTER
Catalog No.	Description	Credits
10-602-127	Electrical and Electronic Sys	3
10-602-195	Advanced Chassis Systems	2
10-602-197	Engine Performance 1	3
10-602-198	Engine Performance 2	4
10-602-199	Alternative Fuels Technology	1
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	16

THIRD SEMESTER
Catalog No.	Description	Credits
10-602-123	Engine Repair 2	3
10-602-128	Electrical and Electronic Sys	3
10-602-196	Automotive Climate Control Sys	3
10-602-200	Diesel Fuel Technology	1
10-602-201	Vehicle Computer Controlled Sy	1
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	17

FOURTH SEMESTER
Catalog No.	Description	Credits
10-602-109	Auto Transmission/Transaxle	4
10-602-149	Manual Drive Train and Axles	4
10-602-150	Automotive Certification Prep	1
10-602-202	Advanced Vehicle Man Tech	3
10-602-203	Vehicle Body Mechanical Svc	1
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	19
	TOTAL CREDITS	70

The following certificates/technical diplomas may be applied toward this program:
906021, Service Writer

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-602-103 ENGINE REPAIR 1 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on in-vehicle repairs including engine cooling and lubrications. (Corequisite: 10-602-107, Automotive Service Fundamentals)

10-602-104 BRAKE SYSTEMS ...develop the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.) (Corequisite: 10-602-107 Automotive Service Fundamentals)

10-602-107 AUTOMOTIVE SERVICE FUNDAMENTALS ...safety and the use of basic hand/power tools in accordance with industry standards. Introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services.

10-602-109 AUTOMATIC TRANSMISSION/TRANSAXLE ...develop the skills needed to diagnose, service and repair automatic transmission/transaxles including overhaul procedures. Prerequisite: 10-602-127, Electrical and Electronic Systems 2)

10-602-123 ENGINE REPAIR 2 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on out-of-vehicle engine repair including overhaul procedures. (Prerequisite: 10-602-103, Engine Repair 1)

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS ...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Corequisite: 10-602-107 Automotive Service Fundamentals or 10-405-100 Introduction to Collision Repair)

10-602-127 ELECTRICAL AND ELECTRONIC SYSTEMS 2 ...develop the skills needed to diagnose, service and repair electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems. (Prerequisite: 10-602-125 Electrical and Electronic Systems 1)

10-602-128 ELECTRICAL AND ELECTRONIC SYSTEMS 3 ...develop the skills needed to diagnose, service and repair electrical and electronic systems including driver information, horn, wiper/washer, power accessories, cruise control, air bag, antitheft and radio systems.

10-602-149 MANUAL DRIVE TRAIN AND AXLES ...develop the skills needed to diagnose, service and repair clutches, manual transmissions/transaxle, differentials, four wheel drive/all wheel drive, and drive axles. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-150 AUTOMOTIVE CERTIFICATION PREPARATION ...this course provides an opportunity for students to develop the knowledge, skills and understanding required to successfully complete the Automotive Technician certification test.

10-602-195 ADVANCED CHASSIS SYSTEMS ...develop the skills needed to diagnose, service and repair antilock brake, vehicle stability enhancement, and electronic steering and suspension system. (Prerequisites/Corequisites: 10-602-104 Break Systems; 10-602-124 Steering and Suspension System; 10-602-125 Electrical and Electronic Syst)

10-602-196 AUTOMOTIVE CLIMATE CONTROL SYSTEMS ...develop the skills needed to diagnose, service and repair climate control systems including heating, cooling, and air distribution. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-197 ENGINE PERFORMANCE 1 ...develop the skills needed to diagnose, service and repair powertrain control and ignition systems. Emphasis on diagnostic procedures and the problem-solving techniques associated with automotive engine performance and drivability. (Prerequisite: 10-602-103 Engine Repair 1; Corequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-198 ENGINE PERFORMANCE 2 ...develop the skills needed to diagnose, service and repair fuel and emission control systems. Emphasis on diagnostic procedures, problem-solving techniques associated with automotive engine performance and drivability. (Corequisite: 10-602-197 Engine Performance 1)

10-602-199 ALTERNATIVE FUELS TECHNOLOGY ...develop the knowledge skills process and understanding of Compressed Natural Gas (CNG) Systems, Automotive Hybrid Vehicles, Automotive Hybrid Safety and Emergency Response and Fuel Cells.

10-602-200 DIESEL FUEL TECHNOLOGY ...develop the knowledge, skills, process, and understanding of automotive diesel fuels, diesel fuel system components, diesel fuel system testing and diesel engine operation. (Prerequisite: 10-602-199 Alternative Fuels Technology)

10-602-201 VEHICLE COMPUTER CONTROLLED SYSTEMS ...develop the knowledge skills process and understanding of related electronic module sensor/switch testing, input/output date interpretation and testing components with scanner/lab scope testers. (Corequisite: 10-602-128 Electrical and Electronic Systems 3)

10-602-202 ADVANCED VEHICLE MANUFACTURE TECHNOLOGY ...diagnose, service and repair intermittent drivability concerns, monitoring live PID data with scanner, graphing data with lab scope, fuel injection monitoring with scanner, graphing fuel injectors with lab scope, performing diagnostic snapshot/recordings of live vehicle data, and playing back the recorded data to isolate the concern. (Prerequisites: 10-602-198, Engine Performance 2; 10-602-128 Electrical and Electronic Systems 3)

10-602-203 VEHICLE BODY MECHANICAL SERVICE ...knowledge skills process and understanding of internal door components/moveable glass, body opening adjustments, exterior body components, seat removal/repair, sunroof repair, wind noise diagnosis, water leak diagnosis, and interior trim.

Broadcast Captioning
Program Code 101701
Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Lakeshore Technical College.

Program Description

You've read the scrolling captions for the hearing-impaired on your TV screen. The person providing instantaneous text of programs is trained in realtime transcription techniques and technology. These skills can also be used to provide CART (Communication Access to Realtime Translation) for hearing-impaired students in educational as well as public settings. If you're an excellent listener, have strong language and communication skills, are committed to accuracy and able to work on deadline, a career in broadcast captioning may be a perfect fit for your talents.

Program Outcomes

- Develop proficiency in machine shorthand using realtime theory.
- Develop a personal dictionary, read, translate, and edit transcripts using CAT (computer-aided transcription) software.
- Demonstrate knowledge of proper captioning procedures and responsibilites for captioning and CART reporting.
- Demonstrate knowledge of the professional reporting organizations and methods of gaining certification as a Certified Broadcast Captioner.

Requirements for Program Entry

Broadcast Captioning is a collaborative program between LTC and NWTC. Application for this program must be completed through LTC.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:
- Broadcast Captioner
- CART Reporter
- Internet Reporter
- Offline Captioner
- Conference and Convention Reporter

About Shared Programs

LTC offers its Broadcast Captioning program in cooperation with technical colleges across the state. As a broadcast captioning student, you'll:
- Attend live, interactive TV classes and labs at your local technical college.
- Take general studies classes and labs at your local technical college.

Curriculum

Broadcast Captioning is a collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon completion, a student will have earned 70 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-106-104	Realtime Reporting 1	5
10-106-144	Realtime Reporting Orientation	1
10-106-159	Legal Terminology	1
10-106-184	Realtime Reporting 1 Lab	2
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-106-105	Realtime Reporting II	5
10-106-158	Realtime Reporting Technology	2
10-106-805	Realtime Reporting II Lab	1
10-801-196	Oral/Interpersonal Comm	3
	OR	
10-801-198	Speech	3
10-809-172	Race Ethnic & Diversity	3
	OR	
10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	17

SUMMER SEMESTER

10-106-108	Realtime Reporting Speed Dev	2
	SEMESTER TOTAL	2

THIRD SEMESTER

10-106-109	Literary I	2
10-106-128	Jury Charge I	2
10-106-156	Testimony I	3
10-106-809	Literary I Lab	1
10-106-828	Jury Charge I Lab	1
10-106-859	Testimony I Lab	1
10-804-123	Math w Business Apps	3
	OR	
10-804-107	College Mathematics	3
	OR	
10-806-112	Principles of Sustainability	3
10-809-195	Economics	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-106-111	Literary II	2
10-106-129	Jury Charge II	2
10-106-142	Judicial Reporting Procedures	2
10-106-143	Judicial Reporting Internship	1
10-106-157	Testimony II	3
10-106-171	Medical Reporting/Terminology	2
10-106-811	Literary II Lab	1
10-106-829	Jury Charge II Lab	1
10-106-857	Testimony II Lab	1
	SEMESTER TOTAL	15

SUMMER SEMESTER

10-170-101	Captioning/CART	4
10-170-143	Internship: Broadcast Cap/CART	1
	SEMESTER TOTAL	5
	TOTAL CREDITS	70

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-106-104 REALTIME REPORTING ...prepares learners to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting 1 Lab is required. CONDITION: 101071 Broadcast Captioning or 101061 Judicial Reporting or 321071 Broadcast Captioning or 321061 Judicial Reporting.

10-106-105 REALTIME REPORTING II ...prepares the learner to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet," apply realtime conflict elimination principles, apply realtime theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent registration in Realtime Reporting II Lab is required.

10-106-108 REALTIME REPORTING SPEED DEVELOPMENT ...further develops skills acquired in Realtime Reporting II on literary, jury charge, and testimony material beginning at 120 wpm. Scheduled during the summer term, students must pass two, 3-minute timings at a minimum speed of 110 words per minute.

10-106-109 LITERARY I ...prepares the learner to write literary material at 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary I Lab is required.

10-106-111 LITERARY II ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary II Lab is required.

COURSE DESCRIPTIONS *continued*

10-106-128 JURY CHARGE 1 ...prepares the student to write jury charge material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge 1 Lab is required.

10-106-129 JURY CHARGE II ...expands the student's ability to write jury charge material dictated at a minimum speed of 200 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge 2 Lab is required.

10-106-142 JUDICIAL REPORTING PROCEDURES ...introduces the student to reporting procedures for which reporters are responsible in the courtroom, deposition, and real-time reporting environments, including preparing salable transcripts, researching legal citations, and developing professional development plans.

10-106-143 JUDICIAL REPORTING INTERNSHIP ...prepares the student to write machine shorthand verbatim for a minimum of 40 hours of actual writing time in the courtroom, classroom, and deposition environment under the supervision of a working reporter; prepare a 40-page transcript, and summarize the internship experience in a narrative report.

10-106-144 REALTIME REPORTING ORIENTATION ...prepares student to use computer-assisted, real-time transcription software, Windows, e-mail, a steno machine, and a laptop in writing machine shorthand in court reporting and to complete and submit required coursework. CONDITION: 101071 Broadcast Captioning program requirements met or 101061 Judicial Reporting program requirements met.

10-106-156 TESTIMONY I ...prepares the student to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe with a minimum of 95 percent accuracy. Concurrent registration in Testimony I Lab is required.

10-106-157 TESTIMONY II ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR exam. Concurrent registration in Testimony II lab is required.

10-106-158 REALTIME REPORTING TECHNOLOGY ...prepares the student to use CAT (Computer-Assisted Transcription) and real-time software; build personal dictionaries; and read, translate, and edit transcripts. Students are introduced to real-time translation procedures in court, depositions, captioning, and educational environments.

10-106-159 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-106-171 MEDICAL REPORTING & TERMINOLOGY ...prepares the student to write medical terminology in machine shorthand using appropriate medical terminology from material dictated at a minimum speed of 150 wpm for 5 minutes with a minimum of 95 percent accuracy. The student will research medical information, prepare salable transcripts, and submit timings.

10-106-184 REALTIME REPORTING 1 LAB ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting I is required.

10-106-804 REALTIME REPORTING 1 LAB ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms, phrases, words in singular and plural forms, prefixes and suffixes. Concurrent registration in Realtime Reporting 1 is required. Co-requisite: 10106104 Real Time Reporting 1.

10-106-805 REALTIME REPORTING II LAB ...expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffices; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet," apply realtime conflict elimination principles, apply realtime theory and write dictation using a realtime theory. Concurrent registration in Realtime Reporting II is required.

10-106-809 LITERARY I LAB ...expands the student's ability to write literary material dictated at a speed of 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

10-106-811 LITERARY II LAB ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Literary II is required.

10-106-828 JURY CHARGE I LAB ...prepares the student to write jury charge material dictated at a speed of 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

10-106-829 JURY CHARGE II LAB ...expands the student's ability to write jury charge material at 200 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Jury Charge II is required.

10-106-857 TESTIMONY II LAB ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three, 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR Exam. Concurrent registration in Testimony II is required.

10-106-859 TESTIMONY 1 LAB ...expands the student's ability to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

10-170-101 CAPTIONING/CART ...prepares the learner to write dictation at 180 wpm, broadcast 10 minutes non-stop, write new punctuation and symbols, new flagged alphabet characters, environmental sounds, web/Internet addresses, common proper names, common female and male first names, governmental/political terms, terms applicable to food, the names of animals, finger-spell words, increase vocabulary, use terms applicable to criminology, and manage dictionaries. Concurrent registration in Captioning/CART I Lab at student's campus is required.

10-170-143 INTERNSHIP IN BROADCAST CAPTIONING/CART ...prepares the learner to caption live broadcast, use television broadcast terminology, describe television broadcast operations, and provide CART services to a hearing-impaired person. Students must be writing at 180 words per minute literary prior to enrolling in this course.

Business Management
Program Code 101023
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. Most first year program courses available throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

The Business Management program provides learners with foundational skills needed to manage the operations of a business. Graduates prepare to successfully meet the challenges and opportunities encountered in today's dynamic business environment. Learners develop competence in the business functions of planning, organizing, directing, and controlling.

General business managers are found in nearly all work settings in virtually every sector of the economy. Business management salaries vary by company and position. Most graduates begin in positions of limited responsibility and will advance through the ranks of the organization. The purpose of the program is to develop business professionals who can grow with the needs of their employers. Program curriculum will develop or improve the core skills that are vital for success in the business world.

Program Outcomes

- Plan the operations of a business across functional areas.
- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Control business processes.
- Apply concepts, methods, and processes in business operations.
- Understand the financial components of an organization.
- Apply marketing strategies.
- Apply current and emerging technologies to business situations.
- Analyze and synthesize information and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, a graduate may find employment opportunities as a manager of operations with increased responsibility, authority and commensurate pay.

Note

- Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
901023, Business Operations

Curriculum

It is recommended students start with the courses in semester 1, continue with semester 2, move on to semester 3 and finish with semester 4. A sub-plan must be declared upon enrolling in the program. All courses in that sub-plan will need to be completed to graduate. The Business Management program is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-101-190	Accounting-QuickBooks	1
10-102-156	Operations & Service Mgmt	3
10-102-158	Business-Introduction	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
	One course from your DECLARED sub-plan	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-101-106	Accounting-for Non-Accountants	3
10-102-160	Global Business Mgmt	3
10-196-191	Supervision	3
	One course from your DECLARED sub-plan	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
	SEMESTER TOTAL	18

THIRD SEMESTER

	One course from your DECLARED sub-plan	3
	One course from your DECLARED sub-plan	3
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
10-104-110	Marketing Principles	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16

Curriculum *continued*

FOURTH SEMESTER

10-102-150	Business Law & Ethics	3
10-102-199	Bus Mgmt Internship Practicum OR	2
10-102-197	Bus Mgmt Field Research	2
	One course from your DECLARED sub-plan	3
10-809-103	Think Critically & Creatively	3
10-809-172	Race Ethnic & Diversity	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	66

CURRICULUM NOTE
It is recommended courses in a sub-plan be taken in the order listed.

Sub-Plans:

BUSINESS MANAGEMENT
10-196-189 Team Building/Prob Solve
10-196-193 Human Resource Mgmt
10-182-110 Lean Operations Mgmt
10-101-184 Business Finance/Budgeting
10-104-191 Customer Service

ENTREPRENEURSHIP
10-145-185 Organizing Your Small Business
10-145-186 Financial Management-Small Business
10-145-187 Marketing Your Small Business
10-145-188 Entrepreneurial Service Management
10-145-189 Writing a Business Plan-Small Business

RETAIL MANAGEMENT
10-104-190 Retail Principles
10-104-192 Merchandise Mgmt
10-104-101 Selling Principles
10-104-193 Retail Operations
10-104-135 Retail Management-Survival

HOTEL & RESTAURANT MANAGEMENT
10-109-114 Hotel Management
10-109-127 Hospitality Facilities Management
10-109-126 Hospitality Finance
10-109-168 Restaurant Management
10-104-125 Event Marketing

GLOBAL BUSINESS
10-102-104 International Business Practice
10-104-148 Global Marketing
10-138-180 Global Trade Finance
10-182-160 Global Supply Chain Mgmt
10-102-184 Global Business Cultures

SUPPLY CHAIN MANAGEMENT
10-182-157 Logistics/Supply Chain Mgmt
10-182-127 Purchasing
10-182-190 Transportation Mgmt
10-182-131 Negotiations
10-182-120 Enterprise Resource Plan/Cont

CREDIT & FINANCE
10-114-109 Credit-Policies/Procedures
10-114-153 Finance-Personal
10-114-166 Credit-Collection Methods
10-114-151 Finance-Banking Principles
10-114-170 Credit-Law

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w Business Apps)

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...a cross-functional approach to operations management with an overview of safety, quality, inventory and service.

10-102-157 OPERATIONS DECISION MAKING ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisite: 10-102-156, Operations & Service Management)

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global marketing, and global supply chain.

10-102-197 BUSINESS MANAGEMENT FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep. Qualification: Accepted into the Business Management program; completed the first three semesters of the program.)

10-102-199 BUSINESS MANAGEMENT INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep. Qualification: Accepted into the Business Management program; completed the first three semesters of the program.)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, six sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

Casino Management

Program Code 101097
Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Casino Management program prepares students to operate and manage the dynamics of the gaming industry including direct customer interaction, regulatory compliance, and security/surveillance/maintenance aspects of both electronic and table games. Specific applications of the ethical, psychological and socio-cultural impacts associated with gaming as a form of recreation and entertainment will be analyzed.

Program Outcomes

- Communicate effectively in written and verbal forms.
- Value diversity in the workplace.
- Perform mathematical calculations for business applications.
- Apply management processes and techniques to the gaming industry, including: planning, organizing, staffing, budgeting, controlling and evaluation.
- Integrate responsibility, accountability, and authority in human resource issues.
- Analyze current business practices/issues and their application to the gaming industry.
- Demonstrate positive workplace attributes for personal/career success.
- Understand the historical base and contemporary issues in tribal/gaming laws.
- Ensure gaming regulations are adhered to, followed, and reported.
- Apply legal and ethical principles to personal and professional behaviors.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Casino Operations Specialist: Responsible for providing leadership and overseeing daily operations in a casino gaming operation environment.

Gaming Security Officer: Ensure a safe and enjoyable environment on the floor for customers and employees, perform day to day operations of gaming protection duties, responsibilities and tasks.

Mid-Level Gaming Operation Management: Supervision of officers and/or operators, schedule day to day assigned duties, ensure gaming regulations are adhered to, followed and reported.

Gaming Surveillance Operator: Observe and report breaches of security and gaming operations to proper personnel.

With additional education and/or work experience, a graduate may find other leadership opportunities in gaming.

Note

Several of the Casino Management classes are offered online. Please call (920) 498-5573 for more information.

Certificates

Students who complete courses in the Casino Management Associate Degree are also eligible for certificates. Each semester qualifies students to receive a certificate:

- First Semester: Foundations of Gaming Leadership
- Second Semester: Gaming Customer Relationships Management
- Third Semester: Gaming Operations Certificate
- Fourth Semester: With the addition of two courses (10-504-903) Professional Communications and (10-504-905) Report Writing, students receive the Gaming Security and Surveillance Certificate.

The following certificates/technical diplomas may be applied toward this program:

- 901097, Casino Management: Foundations of Gaming Leadership
- 901098, Casino Management: Customer Relationship Management
- 901099, Casino Management: Regulations and Operations
- 905042, Casino Management: Security and Surveillance
- 908094, Leadership in Human Relations

Curriculum

The Casino Management Associate Degree is a two-year program. Upon graduation, a student will have completed 66 credits. Courses may be taken in any order; however, below is a suggested timeline.

FIRST SEMESTER

Catalog No.	Description	Credits
10-109-185	Gaming Regulations	3
10-109-187	Intro to Casino Operations	3
10-196-164	Supervisors-Personal Skills	3
10-196-189	Team Building/Prob Solve	3
10-196-191	Supervision	3
10-801-136	English Composition 1	3
	SEMESTER TOTAL	18

SECOND SEMESTER

10-102-158	Business-Introduction	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-104-191	Customer Service	3
10-109-186	Casino Marketing	3
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-109-188	Slots Management	3
10-109-198	Table Games Management	3
10-196-193	Human Resource Mgmt	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	15

FOURTH SEMESTER

10-504-124	Gaming Protection	3
10-504-125	Surveillance Operations	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-199	Psychology Of Human Relations	3
	Elective	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	66

SUGGESTED ELECTIVES

10-102-100, Business and Info Technology Occupational Prep and 10-109-199, Casino Management Internship Practicum

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-158 BUSINESS-INTRODUCTION
...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-104-191 CUSTOMER SERVICE
...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-109-185 GAMING REGULATIONS
...provides an in-depth look at regulatory systems used in gaming; information on regulatory framework, Indian Gaming regulations, and federal government involvement in this relationship.

10-109-186 CASINO MARKETING
...an in-depth study of gaming marketing techniques used in gaming both locally and nationwide. Emphasis on casino marketing department, staffing, organization, duties and procedures.

10-109-187 INTRO TO CASINO OPERATIONS ...management techniques used in gaming. Emphasis on casino organization, staffing, labor/management relations both for the mid-level casino supervisor and the casino executive.

10-109-188 SLOTS MANAGEMENT
...emphasis on casino organization, staffing and labor/management relations both for the mid-level casino supervisor and the casino executive. Practical application of technicians, floor, shift managers duties is stressed.

10-109-198 TABLE GAMES MANAGEMENT
...basic understanding of rules and regulations for roulette, slots, blackjack and Caribbean stud games and understanding the various personnel roles, duties and their functions.

10-196-164 SUPERVISORS-PERSONAL SKILLS ...time management and personal planning, emotional intelligence, effective communication, assertiveness and stress management related to the challenges of a supervisor.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

10-504-124 GAMING PROTECTION
...basic gaming sheets, slots and table games, observe suspicious activity and breaches of policy procedure.

10-504-125 SURVEILLANCE OPERATIONS
...basic understanding of camera systems and operations, policy and procedures for the various geographical areas of the casino and observation techniques.

Certified Medication Assistant
Program Code 305105
Technical Diploma
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is *not* eligible for financial aid.

Program Description
The Certified Medication Assistant is a Certified Nursing Assistant employed in a nursing home who administers specific medications under the supervision of the nursing staff. The program provides an opportunity for students to develop the knowledge of standard practices related to administration of medications affecting multiple body systems.

Program Outcomes
- Define the legal and ethical responsibilities associated with the role of medication assistant.
- Identify factors that influence the effects of medications on the individuals.
- Utilize guidelines common to administration of all medications.
- Utilize knowledge of systems of measurement when administering medications.
- Administer medications safely and efficiently by selected routes.
- Identify effects of common medications on each body system.
- Describe the effects of normal aging on pharmacokinetics.

Requirements for Program Entry
- Be a current employee in a nursing home.
- Requirements for program entry must be completed prior to the start of the program.
- At least 18 years of age.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be on the State of Wisconsin Nurse Aide Directory, with current federal eligibility.
- Have at least 2000 hours experience in direct patient care within the last three years.
- Have worked a minimum of 40 hours, within the last 90 days, with the residents to whom the student will be administering medications.
- Submit a completed employer recommendation form. Available upon request.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. Students must take an Academic Skills Assessment or ACT exam (must be within three years, unless you have a two- or four-year degree). To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following area:

Certified Medication Assistant: maintain employment as a Certified Medication Assistant in a nursing home.

Note
A preceptor is an RN at the nursing home where the student is employed. The preceptor acts as a mentor for the Medication Assistant student. The vital role of the preceptor is to assist the learner in meeting the program outcomes. NWTC asks that the agency agree to the following requirements:
- While supervising students (maximum of 2 students) during the med pass, the preceptor will be dedicated to the med pass.
- Students will be assigned to the same wing/residents for the entire 40-hour clinical rotation.
- Med pass block of time is utilized for med pass skill development and medication education.

If your agency is unable to support these requirements, it is suggested you do not enroll students in this program.

Curriculum
The Certified Medication Assistant Technical Diploma is a 100-hour program which includes 60 hours of theory/lab, held at NWTC Green Bay Campus, and 40 hours of clinical, held at the nursing home where student is employed. Upon graduation, a student will have completed three credits. Orientation will be done during the first class.

FIRST SEMESTER

Catalog No.	Description	Credits
30-510-301	Certified Medication Assistant	3
	SEMESTER TOTAL	3
	TOTAL CREDITS	3

COURSE DESCRIPTIONS
This course provides an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-510-301 CERTIFIED MEDICATION ASSISTANT....is a Certified Nursing Assistant employed in a nursing home who administers selected medications under the supervision of the nursing staff.

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Civil Engineering Technology
Program Code 106071
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
Graduates of the Civil Engineering Technology program typically find employment in the Engineering or Surveying field. Careers include positions in Computer Aided Drafting and Design (CADD), construction administration and inspection, or surveying.

Program Outcomes
- Students will utilize CAD and sketching techniques to produce engineering documents.
- Students will be capable of performing design and routine testing procedures related to construction materials. These materials include soils, Portland cement concrete and hot mix asphalt.
- Students will be capable of understanding the legal aspects of land surveying and use land surveying instruments to collect data necessary to produce topographic maps, establish horizontal and vertical control, and to lay out civil engineering projects.
- Students will demonstrate forces and stresses in elementary structural systems.
- Students will estimate material quantities for construction projects.
- Students will understand operating systems, spreadsheets, word processing, CAD, and other software products to solve technical problems.
- Students will be able to apply elements of design to materials mixtures, roads, subdivision layout, and storm and sanitary sewer systems.
- Students will be able to solve engineering, surveying, and materials testing problems using principles of mathematics, science, engineering and technology.
- Students will be able to conduct, analyze, interpret, and apply results of experiments related to science and civil engineering materials.
- Students will have the ability to function effectively on teams.
- Students will develop problem solving capabilities.
- Students will be able to communicate effectively by producing written and oral reports.
- Students will recognize the need to continue professional development by engaging in life long learning.
- Students will acquire an understanding of professional, ethical and social responsibilities.
- Students will have respect for race, ethnic and diversity issues.
- Students will have a commitment to quality, timelines and continuous improvement.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and drafting.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment. The benchmark grade for Civil Engineering Technology on the College Math assessment is 63. An alternative to the College Level Math assessment would be a score of 21 on the Math portion of the ACT.
- Attendance at orientation or a planned meeting with program staff is required.

Accreditation
The Civil Engineering Technology program at NWTC is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. Telephone: (410) 347-7700.

Board/Certification Examinations
The program also meets the educational requirements to become a Licensed Land Surveyor in the state of Wisconsin.

Note
Students must have had two years of high school algebra, one year of high school geometry, and an acceptable Academic Skills Assessment College Math score or have completed or tested out of Intermediate Algebra w Apps, course 10-804-118, before taking the following first semester program courses: 10-607-128, Soil Mechanics; 10-607-121, Surveying/Mapping; 10-804-196, Trigonometry w/Apps.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Civil Construction Inspector: examines and interprets prints and specifications; confers with contractors and owners to enforce contract specifications, building codes, and zoning ordinances; and also inspects soils, asphalt, concrete, building construction, and underground utilities at the project site.

Civil Drafter: drafts detailed construction drawings, survey drawings, topographical profiles, related maps, and specification sheets used in planning construction of highways and streets, buildings, river and harbor improvements, landfills, flood control, drainage, railroads, airports, water and sewer systems, and other civil engineering projects using Computer Aided Drafting systems.

Civil Soils-Materials Technician: samples and performs tests on soils, hot mix asphalt, concrete, aggregate, and other construction materials; and identifies and classifies soil samples for foundation construction and environmental purposes.

Survey Technician: obtains data and makes computations pertaining to angles, distances, elevations, points, contours, and other purposes using levels, total stations, data collectors, global positioning systems, and other surveying instruments following approved surveying practices.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Civil Engineer
- Construction Superintendent
- Building Inspector
- Civil Designer
- Construction Project Manager
- Surveyor

Curriculum

The Civil Engineering Technology-Associate Degree is a two-year plus one summer semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-606-112	Computer Apps for Technicians	1
10-606-113	CAD	2
10-607-119	Intro to Civil Engr Technology	2
10-607-121	Surveying/Mapping	3
10-607-128	Soil Mechanics	3
10-801-196	Oral/Interpersonal Comm	3
10-804-196	Trigonometry w Apps	3
	SEMESTER TOTAL	17

SECOND SEMESTER

10-607-102	Land Surveying/Computer Appl	1
10-607-110	Cemented Aggregate Mixtures	4
10-607-125	Civil Public Works Construct	2
10-801-136	English Composition 1	3
10-804-195	College Algebra w Apps	3
10-806-154	General Physics 1	4
	SEMESTER TOTAL	17

SUMMER SEMESTER

10-607-191	Civil Engineering Internship	1
	SEMESTER TOTAL	1

THIRD SEMESTER

10-607-131	Surveying 2	4
10-607-134	Surveying-Drafting	3
10-607-135	Statics/Strength Matl-Civil	4
10-804-198	Calculus 1	4
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-607-147	Water Technology	3
10-607-151	Highway Surveying	2
10-607-152	Construction Meth/Bldg Syst	2
10-607-153	Global Positioning Systems	2
10-607-154	Land Law 1	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	68

SUGGESTED ELECTIVES
Land Law II, 10-607-155

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-606-112 COMPUTER APPLICATIONS FOR TECHNICIANS ...basics of a computer system, computer terminology, the Microsoft Windows environment, file management, Microsoft Word and Microsoft Excel.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-607-102 LAND SURVEYING/COMPUTER APPLICATIONS ...overview of a mapping software for applications in land surveying for mapping, contouring and calculations. (Prerequisites: 10-607-121, Survey & Mapping; 10-606-113, CAD)

10-607-110 CEMENTED AGGREGATE MIXTURES ...inspection/testing concepts, sampling procedures, aggregate properties, PCC mix design methods, HMA design, field laboratory quality control testing. ACI Grade I and WisDOT PCCTEC certifications are available through this course. (Corequisite: 10-804-195, College Algebra w Apps)

10-607-119 INTRO TO CIVIL ENGINEERING TECHNOLOGY ...portfolio preparation, lettering and printing, chart plotting, resume creation, library research methods, measurement and scaling, drawing techniques, sheet format and layout, dimensioning, linework, orthographic projection, isometric drawings, and construction print reading. (Prerequisite: Acceptance into the Civil Engineering Technology program)

10-607-121 SURVEYING/MAPPING ...basic surveying principles, history of land, surveying, instruments in the field, making computations, and generating computerized maps. (Corequisites: 10-804-196, Trigonometry w Apps; Accepted into Civil Program)

10-607-125 CIVIL PUBLIC WORKS CONSTRUCT ...horizontal curves, sewer/water systems, civil engineering mapping, field inspector roles, and CAD applications. (Prerequisites: 10-606-113, CAD; 10-804-196, Trigonometry w Apps)

10-607-128 SOIL MECHANICS ...origins of soil, properties/characteristics of soil, soil classification systems, subsurface exploration, foundations, moisture-density relationships, soil compaction, and groundwater. Certification in the use and transfer of portable nuclear density gauges is available through this course. (Prerequisite: Accepted into Civil Engineering Technology program; Corequisite: 10-804-196, Trigonometry w Apps)

10-607-131 SURVEYING 2 ...closed traverse measurements, traverse adjustments, data collection, rectangular coordinate use, land area computation, public land subdivision, land descriptions, horizontal circular curve field layout/computation, and computer applications. (Prerequisites: 10-607-102, Land Surveying/Computer Appl; 10-804-195, College Algebra w Apps)

10-607-134 SURVEYING DRAFTING ...survey tie drafting, survey map plat drawing, certified survey map drawing, subdivision/preliminary plat drawing, and basic use of AutoCAD and a software in the preparation of drawings. (Prerequisite: 10-607-131, Surveying 2 and Instructor approval needed)

10-607-135 STATICS/STRENGTH MATERIALS-CIVIL ...force analysis, moments, resultant and equilibrant forces; coplanar, concurrent, and nonconcurrent systems; static friction; basic relationships of stress and strain under axial, orsional, and bending loads; properties of construction materials. (Prerequisites: 10-806-154, General Physics 1; 10-804-195, College Algebra w Apps; 10-804-196, Trigonometry w Apps)

10-607-147 WATER TECHNOLOGY ...hydrostatic pressure, continuity of flow, conservation of energy, flow in pipes under pressure, open channel flow, sewer design, water quality, wastewater treatment, rainfall, and reservoirs. (Prerequisites: 10-806-154, General Physics 1; 10-804-195, College Algebra w Apps; 10-804-196, Trigonometry w Apps)

10-607-151 HIGHWAY SURVEYING ...vertical curves, road design, volume calculations, site planning, astronomical observations, and construction staking. (Prerequisite: 10-607-131, Surveying 2)

10-607-152 CONSTRUCTION METHODS AND BUILDING SYSTEMS ...building components, construction methods, construction materials, plans, specifications, and print reading. (Prerequisites: 10-607-110, Cemented Aggregate Mixtures; 10-607-125, Civil Public Works Construction; 10-607-128, Soil Mechanics)

10-607-153 GLOBAL POSITIONING SYSTEMS ...introduction and history of GPS; latitude, longitude, and state plane coordinate systems; static, rapid static, and kinematic positioning systems. (Prerequisites: 10-607-121, Surveying and Mapping; 10-804-195, College Algebra w Apps)

10-607-154 LAND LAW 1 ...registration laws of Wisconsin, history of property law, laws of evidence, performing a property survey, adverse possession, unwritten rights, professional liability/stature and role of the land surveyor in court. (Prerequisite: 10-607-134, Surveying-Drafting)

10-607-191 CIVIL ENGINEERING INTERNSHIP... the application of theory, skills, and techniques in the civil engineering profession. (Prerequisite: Instructor approval.)

Clinical Laboratory Technician
Program Code 105131
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Clinical Laboratory Technician is a member of the health care team who provides clinical information for disease prevention, medical diagnosis, and treatment of the patient by processing specimens and performing laboratory tests by manual and automated methods. Clinical Laboratory Technicians may also have responsibilities for information processing, training, and quality control monitoring.

Program Outcomes
- Apply modern clinical methodologies including problem solving and trouble shooting according to predetermined criteria.
- Perform preventative and corrective maintenance of equipment and instruments according to predetermined criteria.
- Collect and process biological and other specimens.
- Perform and report results of clinical laboratory tests.
- Apply laboratory results to diagnosis of clinical conditions and/or diseases.
- Monitor and evaluate quality control in the laboratory.
- Practice laboratory safety and regulatory compliance.
- Communicate with colleagues and patients in a professional manner.
- Perform information processing in the clinical laboratory.
- Model professional behaviors, ethics, and appearance.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Dependent on availability of sites, students may need to travel distances for clinical experiences.
- Students are required to maintain a current Healthcare Provider CPR card to comply with affiliating agency requirements.

Employment Potential
Most Clinical Laboratory Technicians work in hospitals or clinic labs. Some Clinical Laboratory Technicians may choose to work for veterinary laboratories, industrial labs, insurance companies, research facilities, environmental labs, or public health.

Clinical Laboratory Technician: applies knowledge of test procedures and quality control methods in the areas of hematology, chemistry, serology, urinalysis, blood bank, microbiology, and phlebotomy; performs tests accurately and efficiently using both automated and manual methodology; evaluates the clinical significance of test results.

Board/Certification Examinations
Graduates are qualified to take the Board of Certification examination from the American Society for Clinical Pathology.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Skills Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)
- Two semesters High School, or one semester in College of Algebra and Advanced Math, completed with a "C" or better (or attain program benchmark for algebra on the Academic Skills Assessment).
- Two semesters High School, or one semester in College of Biology and Chemistry completed with a grade of "C" or better.
- Applicants with documentation of completion of Intro to Biochemistry, with a "B" or better, will receive priority standing amongst that year's applicant pool.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 90; Arithmetic: 101; Sentence Skills: 94; Algebra: 60. Remediation options are available to reach required scores. Proof of remediation must be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Complete physical examination and provide current immunization information three months prior to entering program.
- Submit Caregiver Background Check paperwork.
- Complete mandatory four-hour job shadow.
- Attend mandatory spring program orientation.

Curriculum
The Clinical Laboratory Technician Associate Degree is a two-year, five-semester program. Upon completion, a student will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
* 10-501-101	Medical Terminology	3
* 10-513-110	Basic Lab Skills	1
* 10-513-111	Phlebotomy	2
* 10-513-113	QA Lab Math	1
* 10-513-115	Basic Immunology Concepts	2
* 10-806-177	Gen Anatomy & Physiology	4
* 10-806-186	Intro to Biochemistry	4
	SEMESTER TOTAL	17

SECOND SEMESTER
* 10-513-114	Urinalysis	2
* 10-513-120	Basic Hematology	3
* 10-513-121	Coagulation	1
* 10-513-122	Introduction to Blood Bank	2
* 10-513-123	Advanced Blood Bank	2
10-801-136	English Composition 1	3
* 10-806-197	Microbiology	4
	SEMESTER TOTAL	17

SUMMER SEMESTER
10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	6

THIRD SEMESTER
* 10-513-130	Advanced Hematology	2
* 10-513-131	Clinical Chemistry 1	3
* 10-513-132	Clinical Chemistry 2	2
* 10-513-133	Clinical Microbiology	4
* 10-513-140	Advanced Microbiology	2
	SEMESTER TOTAL	13

FOURTH SEMESTER
* 10-513-151	Clinical Experience 1	3
* 10-513-152	Clinical Experience 2	4
* 10-513-153	Clinical Experience 3	4
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	14
	TOTAL CREDITS	67

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

Accreditation
The Clinical Laboratory Technician program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) 5600 N River Road, Suite 720 Rosemont, IL 60018, (847) 939-3597

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-513-110 BASIC LAB SKILLS ...explores health career options and the fundamental principles and procedures performed in the clinical laboratory. Learners will utilize medical terminology and basic laboratory equipment. Learners will follow required safety and infection control procedures and perform simple laboratory tests. (Prerequisite: Accepted into Clinical Laboratory Technician Program or Phlebotomy Certificate)

10-513-111 PHLEBOTOMY ...this course provides opportunities for learners to perform routine venipuncture, routine capillary puncture and special collection procedures. (Corequisite: 10-513-110, Basic Lab Skills)

10-513-113 QA LAB MATH ...focuses on performing the mathematical calculations routinely used in laboratory settings. Learners will explore the concepts of quality control and quality assurance in the laboratory. Learners will review regulatory compliance requirements, and certification and continuing education programs. (Prerequisite: Accepted into the Clinical Laboratory Technician program)

10-513-114 URINALYSIS ...prepares learners to perform a complete urinalysis which includes physical, chemical and microscopic analysis. Learners will explore renal physiology and correlate urinalysis results with clinical conditions. (Prerequisites: 10-513-110, Basic Lab Skills and 10-513-113, QA Lab Math)

10-513-115 BASIC IMMUNOLOGY CONCEPTS ...provides an overview of the immune system including laboratory testing methods for diagnosis of immune system disorders, viral and bacterial infections. (Corequisite: 10-513-110, Basic Lab Skills)

10-513-120 BASIC HEMATOLOGY ...covers the theory and principles of blood cell production and function, and introduces the learner to basic practices and procedures in the hematology laboratory. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-111, Phlebotomy; 10-513-115, Basic Immunology Concepts)

10-513-121 COAGULATION ...introduces the theory and principles of coagulation and explores mechanisms involved in coagulation disorders. Emphasis is placed upon laboratory techniques used to diagnose disease and monitor treatment. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-115, Basic Immunology Concepts; 10-513-111, Phlebotomy; Corequisite: 10-513-120, Basic Hematology)

10-513-122 INTRODUCTION TO BLOOD BANK ...introduces basic blood banking concepts and procedures including blood typing and compatibility testing. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-115, Basic Immunology Concepts)

10-513-123 ADVANCED BLOOD BANK ...focuses on advanced blood banking concepts and procedures including work ups for adverse reaction to transfusions and disease states. (Corequisite: 10-513-122, Introduction to Blood Bank)

10-513-130 ADVANCED HEMATOLOGY ...explores mechanisms involved in the development of hematological disorders. Emphasis is placed upon laboratory techniques used to diagnose disorders and monitor treatment. (Prerequisite: 10-513-120, Basic Hematology)

10-513-131 CLINICAL CHEMISTRY 1 ...introduces Clinical Chemistry techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Topics in this course include pathophysiology and methodologies for carbohydrate, lipids, proteins, renal function and blood gas analysis. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-114, Urinalysis; 10-806-177, General Anatomy & Physiology; 10-806-186, Intro to Biochemistry)

10-513-132 CLINICAL CHEMISTRY 2 ...a continuation of Clinical Chemistry Diagnostics, techniques and procedures for analysis using sophisticated laboratory instrumentation. Topics include pathophysiology and methodologies for hepatic, bone, cardiac markers, tumor markers, endocrine function, fetal function, miscellaneous body fluids, and toxicology. (Corequisite: 10-513-131, Clinical Chemistry 1)

10-513-133 CLINICAL MICROBIOLOGY ...presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification of clinically relevant bacteria. Disease states, modes of transmission and methods of prevention and control, including antibiotic susceptibility testing, are also discussed. (Prerequisites: 10-806-197, Microbiology; 10-513-110, Basic Lab Skills; 10-513-133, Basic Immunology Concepts)

10-513-140 ADVANCED MICROBIOLOGY ...overview of acid fast organisms, fungi, parasites, and anaerobic bacteria. The organisms, their pathophysiology, epidemiology, the diseases and conditions that they cause, laboratory methods of handling, culturing and identification will be discussed. (Corequisite: 10-513-133, Clinical Microbiology)

10-513-151 CLINICAL EXPERIENCE 1 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-152, Clinical Experience 2; 10-513-153, Clinical Experience 3)

10-513-152 CLINICAL EXPERIENCE 2 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-151, Clinical Experience 1; 10-513-153, Clinical Experience 3)

10-513-153 CLINICAL EXPERIENCE 3 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-151, Clinical Experience 1; 10-513-152, Clinical Experience 2)

Computer Support Specialist-IT
Program Code 101543
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description
The Computer Support Specialist-IT program emphasizes problem solving using current software packages, programming in Visual BASIC, hardware configurations, networking, operating systems, and software system design.

Program Outcomes
- Develop attractive and effective slide shows using PowerPoint presentation software.
- Develop professional letters and reports using Word document processing software.
- Develop professional and user-friendly spreadsheets using Excel spreadsheet software.
- Develop business applications which integrate and share different types of files or objects.
- Automate application software operations via macros and VBA programming techniques.
- Develop relational database applications using database management software.
- Design a normalized database.
- Develop attractive and effective Web pages using HTML coding techniques.
- Develop functional Web pages that automate operations using Java Script programming techniques.
- Install, configure, and maintain computer hardware and peripherals.
- Troubleshoot and repair computer hardware and operating systems problems.
- Develop computer programs to perform common business functions using the Visual Basic programming language.
- Perform basic computer system functions and operations using the command line and shell scripts.
- Configure and administer common microcomputer operating systems.
- Automate Windows operations using common operating system scripting languages.
- Perform common help desk and end-user support functions using current technologies and protocols.
- Plan and conduct computer training sessions using appropriate technologies and delivery methods.
- Develop effective lesson plans, training materials, and assessment tools to support technical presentations.
- Develop technical documentation and "help" resources to support the use of computer facilities and services.
- Apply job seeking skills to secure employment in the computer field.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

IT Consultant: provides one-on-one problem solving for users.

Help Desk/Support Specialist: develops customized user menus, installs software packages, administers networks, and is a support technician for software packages.

PC Programmer: performs detailed program design, coding, testing, debugging, documentation, and implementation of online or interactive systems.

Computer Sales Representative: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

IT Trainer: trains employees on software packages which enable the user to solve problems on an individual basis.

Network Assistant: helps to configure networks, installs hardware and software, and trains users.

Desktop Application Developer: provides for the development, testing, implementation, documentation, and support of customized desktop applications.

PC Repair Technician: maintains and repairs hardware components of desktop computers, network servers and devices, and peripheral equipment including printers and scanners.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Network Administrator
- Database Administrator
- Internet Site Administrator
- Hardware Technician
- IT Department Supervisor

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- One year of high school algebra completed.
- Ability to use computer keyboard and mouse.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. This will include an Algebra assessment. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 95; Arithmetic: 66; Sentence Skills: 89; Algebra: 86. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Curriculum
The Computer Support Specialist-IT Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-101-106	Accounting-for Non-Accountants	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-154-160	IT:Support:Software-Intro	3
10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
	SEMESTER TOTAL	18

SECOND SEMESTER

10-102-158	Business-Introduction	3
10-152-163	IT:Program:Visual Basic	3
10-154-153	IT:Support:Oper Sys & Data Com	3
10-154-190	IT:Support:Help Desk/User Sup	2
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
	SEMESTER TOTAL	17

THIRD SEMESTER

10-102-100	Bus and Info Tech Intern Prep	1
10-107-194	IT:Documentation	2
10-150-163	IT:Network:Cisco 1	3
	OR	
10-150-165	IT:Network:Microsoft Server 1	3
10-154-157	IT:Support:Advanced Projects	3
10-154-161	IT:Support:Database Theory	2
10-154-171	IT:Support:Integration-VBA	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	17

FOURTH SEMESTER

10-107-195	IT:Training	2
10-154-172	IT:Support:Database App	3
10-154-180	IT:Support:Web Techniques	3
10-154-199	IT:Support: Intern Practicum	2
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	68

CURRICULUM NOTE
A student desiring a strong financial background or a student planning to double major in Accounting is advised to substitute the four credit Accounting 1 (10-101-110) for the three-credit Accounting for Non-Accountants (10-101-106). To discuss this further, please contact an NWTC counselor or academic advisor.

The following certificates/technical diplomas may be applied toward this program:
- 311546, Computer Support Technician-IT
- 901542, Computer Support

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-107-194 IT:DOCUMENTATION ...plan documentation content and delivery methods; develop online, context-sensitive written documentation, become familiar with ISO 9000 standards, package PDF files, and create compiled help modules. Proficiency using Word required. (Prerequisite: 10-801-136, English Composition 1 or equivalent)

10-107-195 IT:TRAINING ...effective presentation skills, plan training content and delivery methods, write lesson plans, provide training materials, conduct training sessions, and assess learners' grasp of stated objectives. (Prerequisites: 10-154-160, IT:Support:Software-Intro AND 10-154-150, IT:Support:Hardware-Intro)

10-150-163 IT:NETWORK:CISCO 1 ...cable characteristics and termination, structured cabling systems, OSI reference model, IP addressing and subnetting, network architectures and basic protocols, Ethernet switches, basic router operation and configuration.

10-150-165 IT:NETWORK:MICROSOFT SERVER 1 ...Microsoft Server OS administration and implementation. Learner will install and configure the OS, Active Directory, Group Policies, IIS and security. Exam objectives for the Microsoft's 70-290 exam are addressed. (Prerequisite: 10-150-174, IT:Network:Client Operating Systems)

10-150-174 IT:NETWORK:CLIENT OPERATING SYSTEMS ...basic OS functions; memory, CPU, device/file management techniques, OS installation/configuration; configuration of I/O and storage devices; basic network connectivity; standard system maintenance procedures; command line introduction and batch file writing.

10-152-163 IT:PROGRAM:VISUAL BASIC ...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs are covered. (Prerequisites: 10-150-174, IT:Network:Client Op Sys; 10-154-160, IT:Support:Software-Intro)

10-154-150 IT:SUPPORT:HARDWARE-INTRO ...computer network terminology, component identification, POST, computer/peripheral configuration and maintenance, basic operating systems concepts and installations, basic networking concepts and configurations and troubleshooting using the Cisco IT Essentials curriculum.

10-154-153 IT:SUPPORT:OPERATING SYSTEMS AND DATA COMMUNICATION ...core OS operation, configuration of desktop/network OS, system security/audit policy, data communications, network topologies, convergence technologies, mobile applications, virtual desktop management and advanced scripting. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-157 IT:SUPPORT:ADVANCED PROJECTS ...advanced troubleshooting, process automation, network cabling systems, wireless networks, basic router configuration, advanced system security, VoIP, network virtualization, mobile device configuration, disaster recovery planning and emerging technologies. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-160 IT:SUPPORT:SOFTWARE-INTRO ...an introductory course for the Computer Support Specialist program and covers the fundamental capabilities and functions of Word, PowerPoint, Excel, Email correspondence, Internet search engines, and file compression.

10-154-161 IT:SUPPORT:DATABASE THEORY ...fundamentals of database design and administration, including normalization, design methodology, SQL, integrity rules, database management functions and approaches.

10-154-171 IT:SUPPORT:INTEGRATION-VBA ...using Visual Basic for Applications (VBA) to automate operations primarily within the Microsoft Excel object model; integration of other Microsoft Office applications/objects; fundamental programming constructs and data manipulations. (Prerequisites: 10-154-160, IT:Support:Software-Intro; 10-152-163, IT:Program:Visual Basic)

10-154-172 IT:SUPPORT:DATABASE APPLICATION ...database management and application development including design, automation, and use of relational database management systems. (Prerequisite: 10-154-161, IT:Support:Database Theory)

10-154-180 IT:SUPPORT:WEB TECHNIQUES ...web design using HTML and JavaScript. (Prerequisite: 10-152-163, IT:Program:Visual Basic)

10-154-190 IT:SUPPORT:HELP DESK/END USER SUPPORT ...describe the role of the help desk in technology support, use terminology, processes, and tools, and demonstrate the use of business, technical, communication, and self-management skills required for help desk support professionals.

10-154-199 IT:SUPPORT: INTERN PRACTICUM ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Computer Support Technician-IT

Program Code 311546

Technical Diploma

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Computer Support Technician-IT emphasizes problem solving using microcomputer hardware and software facilities including command line environment and Windows operating systems, Microsoft Word, and Microsoft Excel.

Program Outcomes

- Develop attractive and effective slide shows using PowerPoint presentation software.
- Develop professional letters and reports using Word document processing software.
- Develop professional and user-friendly spreadsheets using Excel spreadsheet software.
- Develop computer programs to perform common business functions using the Visual Basic programming language.
- Perform common help desk and end-user support functions using current technologies and protocols.
- Install, configure, and maintain computer hardware and peripherals.
- Perform basic computer system functions and operations using the command line and shell scripts.
- Configure and administer common microcomputer operating systems.
- Automate Windows operations using common operating system scripting languages.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- One year of high school algebra completed.
- Ability to use computer keyboard and mouse.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. This will include an Algebra assessment. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 95; Arithmetic: 66; Sentence Skills: 89; Algebra: 86. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

IT Consultant: provides one-on-one problem solving for users.

Computer Sales Representative: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

With additional education and/or work experience, graduates may find other opportunities for employment.
- IT Trainer
- Network Assistant

Note

This can also be the first year of the two-year Computer Support Specialist-IT program on the Green Bay campus.

The following certificates/technical diplomas may be applied toward this program:

901542, Computer Support

Curriculum

The Computer Support Technician-IT Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 35 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-101-106	Accounting-for Non-Accountants	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-154-160	IT:Support:Software-Intro	3
10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
10-102-158	Business-Introduction	3
10-152-163	IT:Program:Visual Basic	3
10-154-153	IT:Support:Oper Sys & Data Com	3
10-154-190	IT:Support:Help Desk/User Sup	2
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	35

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR-NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-150-174 IT:NETWORK:CLIENT OPERATING SYSTEMS ...basic OS functions; memory, CPU, device/file management techniques, OS installation/configuration; configuration of I/O and storage devices; basic network connectivity; standard system maintenance procedures; command line introduction and batch file writing.

10-152-163 IT:PROGRAM:VISUAL BASIC ...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs are covered. (Prerequisites: 10-150-174, IT:Network:Client Op Sys; 10-154-160, IT:Support:Software-Intro)

10-154-150 IT:SUPPORT:HARDWARE-INTRO ...computer network terminology, component identification, POST, computer/ peripheral configuration and maintenance, basic operating systems concepts and installations, basic networking concepts and configurations and troubleshooting using the Cisco IT Essentials curriculum.

10-154-153 IT:SUPPORT:OPERATING SYSTEMS AND DATA COMMUNICATION ...core OS operation, configuration of desktop/ network OS, system security/audit policy, data communications, network topologies, convergence technologies, mobile applications, virtual desktop management and advanced scripting. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-160 IT:SUPPORT:SOFTWARE-INTRO ...an introductory course for the Computer Support Specialist program and covers the fundamental capabilities and functions of Word, PowerPoint, Excel, Email correspondence, Internet search engines, and file compression.

10-154-190 IT:SUPPORT:HELP DESK/END USER SUPPORT ...describe the role of the help desk in technology support, use terminology, processes, and tools, and demonstrate the use of business, technical, communication, and self-management skills required for help desk support professionals.

10-804-133 MATH & LOGIC ...students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases. (Recommendation: Accuplacer Algebra Test = 61)

Credit Business Management

Program Code 101145
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Credit Business Management prepares learners for careers in credit management. The learners will comprehend the concepts of leadership, demonstrating promotion, control, and collection of consumer and business transactions.

Program Outcomes
- Adhere to internal credit policies and procedures.
- Process credit applications.
- Conduct credit investigations.
- Analyze business and consumer financial statements.
- Make credit decisions.
- Use credit related documents.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Resolve collection issues/problems.
- Resolve discrepancies in customers' accounts.
- Assess how economic policies and changes in the level of business activity affect the credit industry.
- Deliver effective customer service.
- Evaluate the performance of a credit department.
- Demonstrate state and federal laws.
- Manage the work of other people in a team environment.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Perform basic business math calculations.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math.
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 68; Arithmetic: 34; Sentence Skills: 60. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Credit Manager Trainee: learns all phases of operating a business or financial institution credit department, usually in preparation for a management position.

Assistant Credit Manager: assists a department or branch manager in all phases of operation, including the extension, collection, and control of credit.

Credit Specialist: supports the credit process in the application of cash receipts, collection calls, and problem resolution.

Collection Specialist: contacts consumers or businesses to arrange payments and may become involved with legal aspects of collections.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Credit Manager
- Commercial Banker

Note
- Learners interested in double majoring in Accounting or Financial Institutions Management should consult with an instructor.
- Refer to the program website for information on accelerated learning and for helpful tips that will assist you in achieving the highest quality and most rewarding academic experience.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
908094, Leadership in Human Relations

Curriculum
The Credit Business Management Associate Degree is an accelerated program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-102-158	Business-Introduction	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-114-111	Credit-Consumer	4
10-114-117	Credit-Business	4
10-801-136	English Composition 1	3
	SEMESTER TOTAL	17

SECOND SEMESTER
10-101-110	Accounting 1	4
10-102-150	Business Law & Ethics	3
10-114-121	Credit-Management Practices	3
10-114-166	Credit-Collection Methods	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16

THIRD SEMESTER
10-114-101	Credit-Business Applications	3
10-114-170	Credit-Law	3
10-804-123	Math w Business Apps	3
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	15

FOURTH SEMESTER
10-102-100	Bus and Info Tech Occup Prep	1
10-102-181	Financial Statement Analysis	4
10-114-122	Credit-Customer Serv/Sales	3
10-114-199	Credit-Internship Practicum	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3
	Elective	3
	SEMESTER TOTAL	19
	TOTAL CREDITS	67

CURRICULUM NOTE
The courses beginning with course numbers 10-114-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students are expected to do most assignments outside of class time.

SUGGESTED ELECTIVES
Any course in the Financial Institutions Management or Accounting program.

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues.

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-102-181 FINANCIAL STATEMENT ANALYSIS ...types of financial statements, analyze financial statements, research company data, perform industry research, examine SEC 10-K and annual report, and write financial analysis report. Highly recommended to be taken in the 4th semester or that the learner have applicable credit or accounting work experience. (Prerequisite: 10-101-110, Accounting 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/ footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-114-101 CREDIT-BUSINESS APPLICATIONS ...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, breakeven, depreciation, gain/ loss, and inventory. (Prerequisite: 10-101-110, Accounting 1)

10-114-111 CREDIT-CONSUMER ...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-114-117 CREDIT-BUSINESS ...credit in the business world and company, organizing credit department, policies, procedures, terms of sale, credit investigations, evaluate credit worthiness, support credit decisions, credit forms, international credit and business fraud. (Prerequisite: 10-114-111, Credit-Consumer)

10-114-121 CREDIT-MANAGEMENT PRACTICES ...manager's responsibilities/ environment, planning, problem solving, organizational structure/cultures, staffing/ human resources, leadership/teamwork, motivational techniques, communications, management controls, ineffective performers, and ethical business practices. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business)

10-114-122 CREDIT-CUSTOMER SERVICES & SALES ...customer service and sales issues faced by a business credit department, proper phone and face-to-face etiquette with credit customers, and deduction resolution. (Prerequisite: 10-114-166, Credit-Collection Methods)

10-114-166 CREDIT-COLLECTION METHODS ...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business or 10-114-109, Credit-Policies/Procedures)

10-114-170 CREDIT-LAW ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business or 10-114-109, Credit-Policies/Procedures)

10-114-199 CREDIT-INTERNSHIP PRACTICUM ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Criminal Justice-Corrections

Program Code 105042
Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Criminal Justice-Corrections students relate theory to current practice trends, problems, and issues and also study correctional counseling, sociology, and security.

Program Outcomes

- Analyze security procedures.
- Exercise interviewing techniques.
- Examine the state and federal court structure.
- Apply restraints.
- Outline the juvenile and adult criminal justice system.
- Prepare reports.
- Interpret correctional law.
- Summarize probation and parole procedures.
- Demonstrate oral communication skills.
- Compare numerous theories of criminal behavior.
- Contrast various components of the criminal justice system.
- Distinguish numerous functions of community corrections.
- Identify the components that comprise corrections.
- Summarize the administrative and managerial functions within the correctional system.
- Be eligible to become a state certified jail officer.
- Apply basic math skills.
- Demonstrate keyboarding and computer skills.
- Be eligible to become a state certified juvenile detention officer.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students looking to be certifiable must provide an official high school transcript or GED/HSED transcript.
- To be eligible to enroll in core Criminal Justice courses, certification track students must have their student folder complete.
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Correctional Officer: monitors, supervises, and informally counsels inmates under his/her control; works cooperatively with other correctional staff; maintains order within the facility; enforces rules and regulations; searches inmates for contraband items such as weapons or drugs; transports inmates; mediates disputes between inmates; enforces discipline; and reports verbally and in writing about inmate conduct and the quality and quantity of work done by inmates.

Youth Care Worker: monitors the whereabouts and activities of clients under his/her responsibility, informally counsels, and guides proper personality development of clients.

Detention Worker: oversees and monitors juveniles within a secure detention facility, maintains order within the setting, cooperates with staff and law enforcement personnel, is responsible for oral and written communications with a variety of agencies, and is knowledgeable about federal and state laws concerning juvenile rights.

Students Seeking Certification as an Officer Can Also:
- Apply principles of subject control.
- Implement jail fire safety.

Students Seeking a Certificate in Community Corrections Can Also:
- Understand substance abuse.
- Compare numerous theories of offender treatment.
- Demonstrate methods of computer crime investigation.
- Understand the basics of Workplace Spanish.

Students Seeking a Certificate in Alcohol & Other Drug Abuse Can Also:
- Identify and explain common purposes of group counseling.
- Plan and carry out a purposeful counseling group activity.
- Explore the personal and professional characteristics of the counselor.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Adult/Juvenile Administrator
- Institutional Case Worker/Social Worker
- Probation/Parole Agent
- Youth Counselor/Case Aide
- Youth Detention Home Supervisor

Note

- Students should be aware that a previous criminal record will limit their opportunity to gain successful employment.
- The Wisconsin Training and Standards Bureau requires a completed criminal background check in order for students to successfully complete certifiability. Based upon results of the criminal background check, a student may be denied certifiability.
- Students seeking the certifiable jail officer track must successfully complete 15 credits of specific courses within the program, fill out an application, and complete a physical and background check before being eligible to take the following certification requirement courses: PS Job Interview & Resume Writing, 105-04-128; Principles of Subject Control (POSC), 10-504-188; Jail Health Care & Fire Safety, 10-504-179.
- Due to Department of Justice-Training and Standards Bureau requirements, transfer of credits for core Criminal Justice courses will not be accepted. The exception to this would be if the courses are from another Wisconsin Technical College that is authorized as a certified Department of Justice-Training and Standards training academy.

The following certificates/technical diplomas may be applied toward this program:

908094, Leadership in Human Relations

Curriculum

The Criminal Justice-Corrections Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-504-114	Police-Nutrition/Fitness	1
10-504-132	Courts/Jurisdiction	3
10-504-153	Ethics - Criminal Justice	3
10-504-172	Criminology	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

SECOND SEMESTER

10-504-123	Correctional Inst	3
10-504-900	Intro to Criminal Justice	3
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-107	College Mathematics	3
	Elective	1
	SEMESTER TOTAL	16

THIRD SEMESTER

* 10-504-122	Correctional Admin	3
10-504-129	Correctional Interviewing	3
10-504-905	Report Writing	3
10-809-172	Race Ethnic & Diversity	3
10-809-197	Contemporary Amer Society	3
	Elective	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

* 10-504-133	Correctional Sociology	3
* 10-504-145	Corrections Law	3
* 10-504-147	Correctional Security	3
10-504-154	Youth-Chng Community	3
10-504-155	Community Corrections	3
10-809-166	Intro to Ethics: Theory & App	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	68

CURRICULUM NOTE

* Core corrections/criminal justice courses: Students enrolled in either of the Associate Degree Criminal Justice programs looking to become certifiable must complete core criminal justice courses for their program within three years. The clock starts for a college certification track student on the first day the student enters into a core criminal justice course.

These courses must be completed successfully within the 3-year time frame before a DOJ transcript can be submitted.

SUGGESTED ELECTIVES

* Principles of Subject Control (POSC), 10-504-188
* Jail Health & Fire Safety, 10-504-179
* PS Interview & Resume Writing, 10-504-128
* Professional Communications, 10-504-903
* Corrections Internship, 10-504-171

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-504-114 POLICE-NUTRITION/FITNESS ...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

10-504-122 CORRECTIONAL ADMINISTRATION ...chain of command, roles of the correctional supervisor, administrative structures, current management practices and problems, personnel needs, organizational theories, mission goals, policy making, inmate discipline, and report writing.

10-504-123 CORRECTIONAL INSTITUTION ...the evolution of punishment, development of prisons, southern penal systems, the "Big House" era, prisoner movement, inmate groups, special offender groups, the female offender, prison programs, prison services.

10-504-129 CORRECTIONAL INTERVIEWING ...process of correctional interviewing using basic skills model; use of nonverbal and verbal communication; securing admissible confessions that preserve individual's constitutional rights; ethics in criminal justice interviewing.

10-504-132 COURTS/JURISDICTIONS ...development of the American judicial system, the Federal and Wisconsin court structure, Wisconsin judicial rules and procedures from complaint to sentencing as they impact police or correctional officers.

10-504-133 CORRECTIONAL SOCIOLOGY ...inmate adjustment process, informal organizations, responsibilities of a correctional officer, adult/juvenile admission processes, supervision of "special" inmates, suicide prevention, juvenile detention operations, juvenile release processes, and stress.

10-504-145 CORRECTIONS LAW ...laws, rules, and standards affecting jails, Federal and State Court systems, criminal and civil actions, criminal sentences, plea bargaining, community-based sanctions, sentencing statutes and guidelines, prisoner rights, and inmate litigation.

10-504-147 CORRECTIONAL SECURITY ...inmate security control, inspections, movements, counts; resident protection, privacy, safety, searches, contraband, restraints, equipment; building security; detection devices; legal aspects; personnel protection; building clearing; hostage negotiations; and pad subduing techniques.

10-504-153 ETHICS - CRIMINAL JUSTICE ...in-depth study of ethical philosophies and their application to the Law Enforcement Officer's Code of Ethics and professional performance in the field. Topics include morality, leadership, ethical decision-making, self-actualization, ethics-based performance and the breakdown of ethical conduct.

10-504-154 YOUTH-CHANGING COMMUNITY ...juvenile delinquency; historical development controlling children, gangs, family, endangered children; legal requirements of handling juveniles; discipline of juveniles; supervision of juveniles; and community-based programs.

10-504-155 COMMUNITY CORRECTIONS ...criminal justice system stages, community-based corrections, diversion programs, pre-trial release programs, restitution, community service, temporary release programs, halfway houses, female offenders, drug and alcohol abusing offenders, and juvenile programs.

10-504-172 CRIMINOLOGY ...nature, extent, and distribution of crime in the United States; biological, psychological, and sociological aspects of crime causation; and legal and political implications of crime prevention and control.

10-504-900 INTRO TO CRIMINAL JUSTICE ...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-905 REPORT WRITING...rationale and methods of law enforcement reporting, principles of effective report writing, organizing reports, writing operational law enforcement reports based on case studies. (Prerequisite: 10-801-136, English Comp 1 or 10-801-175, English Comp 1)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Criminal Justice-Law Enforcement
Program Code 105041
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Criminal Justice-Law Enforcement students study the law enforcement field plus physical and behavioral sciences to meet the demands of the police profession, including criminal investigation, traffic law, patrol procedures, and scientific crime laboratory practices.

Program Outcomes
- Qualify for entry level positions in law enforcement.
- Write reports.
- Apply courtroom testimony techniques.
- Demonstrate knowledge of laws and principles of arrest, search, and seizure.
- Demonstrate understanding of relevant state statutes.
- Interpret selected theories of criminal behavior.
- Describe the structure and procedures of the court system.
- Describe the structure and procedures of the police organization.
- Describe the structure and procedures of corrections.
- Describe the structure and procedures of the juvenile system.
- Investigate an accident.
- Interview suspects and witnesses.
- Process a crime scene.
- Apply investigative techniques.
- Contrast the various police community relations programs.
- Make appropriate judgments on risk and other factors of police situations.
- Describe various patrol tactics.
- Contrast major social institutions within American society.
- Demonstrate effective communication skills.
- Apply basic math skills.
- Demonstrate basic computer skills.
- Students seeking certification can also: Operate vehicles in emergency situations. Demonstrate arrest, search, and seizure.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Police Officer: performs general traffic and law enforcement duties at the municipal level.

Deputy Sheriff: performs general traffic and law enforcement duties, jailer, and telecommunications responsibilities at the county level.

DNR Officer: enforces fish, game, forest, and environmental laws at the state level.

State Trooper: performs traffic and law enforcement duties at the state level.

Military Law Enforcement Officer: performs criminal investigations, is responsible for traffic assignments, patrol, and general law enforcement duties in any branch of the military service at installations, forts, and bases.

Private Investigator: conducts criminal and noncriminal investigations for private businesses and industries.

Security Guard: patrols and investigates for retail business and private industrial plants.

Correctional Officer: is assigned to security and general duties in a correctional institution.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Police Administrator
- Chief Deputy
- State Agent
- Federal Agent
- Investigator
- K-9 Officer

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students looking to be certifiable must provide an official high school transcript or GED/HSED transcript.
- To be eligible to enroll in core Criminal Justice courses, certification track students must have their student folder complete.
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Note
*Students enrolled in either of the Associate Degree Criminal Justice programs looking to become certifiable must complete core criminal justice courses for their program within three years. The clock starts for a college certification track student on the first day the student enters into a core criminal justice course.

These courses must be completed successfully within the 3-year time frame before a DOJ transcript can be submitted.
- Due to Department of Justice-Training and Standards Bureau requirements, transfer of credits for core Criminal Justice courses will not be accepted. The exception to this would be if the courses are from another Wisconsin Technical College authorized as a certified Department of Justice-Training and Standards training academy.
- Students who want to be certifiable in Wisconsin must enroll in the Criminal Justice Law Enforcement-Advanced Standing Certificate.

The following certificates/technical diplomas may be applied toward this program:
- 905044, Criminal Justice Law Enforcement-Advanced Standing
- 908094, Leadership in Human Relations

For complete program information, go to: www.nwtc.edu

Curriculum

The Criminal Justice-Law Enforcement Associate Degree is a two-year, four-semester program. Upon graduation a student will have completed 65 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-504-114	Police-Nutrition/Fitness	1
10-504-132	Courts/Jurisdiction	3
10-504-153	Ethics - Criminal Justice	3
10-801-196	Oral/Interpersonal Comm	3
10-801-198	Speech	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

SECOND SEMESTER

	Catalog No.	Description	Credits
*	10-504-900	Intro to Criminal Justice	3
*	10-504-901	Constitutional Law	3
*	10-504-903	Professional Communications	3
	10-801-136	English Composition 1	3
	10-804-107	College Mathematics	3
		Elective	3
		SEMESTER TOTAL	18

THIRD SEMESTER

	Catalog No.	Description	Credits
*	10-504-908	Traffic Theory	3
*	10-504-902	Criminal Law	3
*	10-504-905	Report Writing	3
*	10-504-906	Criminal Investigation Theory	3
	10-809-172	Race Ethnic & Diversity	3
		SEMESTER TOTAL	15

FOURTH SEMESTER

	Catalog No.	Description	Credits
*	10-504-907	Community Police Strategies	3
	10-504-143	Forensic Application	3
*	10-504-904	Juvenile Law	3
*	10-531-101	Emergency Response	1
	10-809-166	Intro to Ethics: Theory & App	3
	10-809-197	Contemporary Amer Society	3
		SEMESTER TOTAL	16
		TOTAL CREDITS	65

CURRICULUM NOTE

* Core Criminal Justice courses: Students enrolled in either of the Associate Degree Criminal Justice programs looking to become certifiable must complete core criminal justice courses for their program within three years. The clock starts for a college certification track student on the first day the student enters into a core criminal justice course. These courses must be completed successfully within the 3-year time frame before a DOJ transcript can be submitted.

SUGGESTED ELECTIVES

* Tactical Operations, 10-504-173
* Driving Operations, 10-504-158
* Scenario Assessment, 10-504-157
* Police Traffic Radar, 10-504-182
* PS Job Interviews & Resume Writing, 10-504-128
* Law Enforcement Internship, 10-504-176
  Marine Officer Boat Patrol, 10-504-150
  USCG Operator (OUPV), 10-504-150
  Master of Vessel 100 Gross Ton, 10-504-152

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-504-114 POLICE-NUTRITION/FITNESS ...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

10-504-132 COURTS/JURISDICTIONS ...development of the American judicial system, the Federal and Wisconsin court structure, Wisconsin judicial rules and procedures from complaint to sentencing as they impact police or correctional officers.

10-504-143 FORENSIC APPLICATION ...processing of crime scenes and use of forensic science in criminal investigations; emphasis on collection, preservation, and court presentation of fingerprint, firearm, impression, trace, body fluid, and document evidence.

10-504-153 ETHICS - CRIMINAL JUSTICE...In-depth study of ethical philosophies and their application to the Law Enforcement Officer's Code of Ethics and professional performance in the field. Topics include morality, leadership, ethical decision-making, self-actualization, ethics-based performance and the breakdown of ethical conduct.

10-504-900 INTRO TO CRIMINAL JUSTICE ...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-901 CONSTITUTIONAL LAW ...arrest and search and seizure of persons, places, and things with or without warrant; cause and procedure to obtain and execute warrants; exclusionary rule and effects of illegal actions.

10-504-902 CRIMINAL LAW ...criminal law characteristics; terminology, history, principles, and philosophy of criminal law; use of the Wisconsin Statute Book; and examination of selected criminal offenses and identifying elements.

10-504-903 PROFESSIONAL COMMUNICATIONS ...process of criminal justice interviewing using basic skills model; use of nonverbal and verbal communication; security admissible confessions that preserve individual's constitutional rights; ethics in criminal justice interviewing.

10-504-904 JUVENILE LAW ...as it relates to the field officer and the application of the law as it relates to juveniles in these situations.

10-504-905 REPORT WRITING ...rationale and methods of law enforcement reporting, principles of effective report writing, organizing reports, writing operational law enforcement reports based on case studies. (Prerequisite: 10-801-136, English Comp 1 or 10-801-175, English Comp 1)

10-504-906 CRIMINAL INVESTIGATION THEORY ...principles of criminal investigation; focus on techniques of an investigation from the preliminary investigation interview, evidence procedures, and specific crime investigation.

10-504-907 COMMUNITY POLICE STRATEGIES ...history of community policing, community, police, problem-solving policing, interpersonal skills, diversity, citizens with disabilities, elderly, youth, gangs, victims/witnesses, media, and community police programs.

10-504-908 TRAFFIC THEORY ...types of patrol and philosophy, concepts, and functions: types of calls and procedures; information gathering and reporting; patrol responsibility at crime scenes; courtroom procedures; and community relations.

10-531-101 EMERGENCY RESPONSE ...legal/ethical issues, initial medical assessment, immediate treatment for a variety of injuries and medical conditions, CPR, defibrillation and response to hazardous materials.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Criminal Justice-Law Enforcement Academy

Program Code 305041

Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description

The full-time Criminal Justice Law Enforcement Academy is a 17-credit, 592-hour, 13-week program designed to produce thoroughly competent and confident officers. Students learn the many skills of modern-day law enforcement and practice these skills in realistic environments. The realism afforded by our tactical facilities is unmatched in providing scenario-based training. Graduates of the Academy begin their career with an unparalleled level of professionalism as well as the ability to confront threats of terror to our homeland security.

The Academy faculty comprises a cross-section of full-time educators, law enforcement officers, supervisors and administrators who are established as leaders in law enforcement training. Staff members recognize they are role models of what is being taught and mentors to those attending.

Program Outcomes

Will be certifiable as a law enforcement officer in the state of Wisconsin.

Requirements for Program Entry

- Completed application.
- An Associate Degree in Criminal Justice, 60 college credits at an associate's degree level or higher, or current employment with a sponsoring law enforcement agency.
- Self-sponsored applicants must complete an NWTC application, form DJ-LE-330 (with essays completed), physician's assessment and have official high school and college transcript(s) sent to the NWTC Public Safety Office. These candidates must also submit to a background check (at applicant's expense), physical fitness assessment and personal interview. Once accepted, these individuals must also complete a drug screen at their own expense.
- Currently employed officers must complete the NWTC application and provide contact information for their agency training officer who will be required to submit a copy of the officer's DJ-LE-303 form and complete additional paperwork. For further details on the application process for employed officers, contact the NWTC Public Safety Department at (920) 491-2627.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Police Officer: performs general traffic and law enforcement duties at the municipal level.

Deputy Sheriff: performs general traffic and law enforcement duties, jailer and telecommunications responsibilities at the county level.

DNR Officer: enforces fish, game, forest and environmental laws at the state level.

State Trooper: performs traffic and law enforcement duties at the state level.

Military Law Enforcement Officer: performs criminal investigations, is responsible for traffic assignments, patrol and general law enforcement duties in any branch of the military service at installations, forts and bases.

Private Investigator: conducts criminal and non-criminal investigations for private business and industry.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Police Administrator
- Chief Deputy
- State Agent
- Federal Agent

Note

- Online application for this program is not available. For program details and application materials, visit: www.nwtc.edu/publicsafety
- Regardless of prior college credit, all courses must be completed to obtain certifiability with the Law Enforcement Standards Board of the Wisconsin Department of Justice.
- This program does not qualify for financial aid as it does not last an entire semester. Veterans' Benefits may be used to cover material and program fees. Contact Enrollment Services for details. A payment plan is also available.
- The credits earned through successful completion of this program do not count toward the 60-credit requirement imposed by Wisconsin Administrative Code Section LES 2.01(1)(e) for employed officers. However, academy credits may be applied toward an Associate Degree in Criminal Justice to partially satisfy the college credit requirement.

Curriculum

Upon graduation, a student will have completed 17 credits and will be certifiable as a law enforcement officer in the state of Wisconsin.

FIRST SEMESTER

Catalog No.	Description	Credits
30-504-337	Policing in America	1
30-504-338	Legal Context	1
30-504-339	Tactical Skills	3
30-504-340	Relational Skills	3
30-504-341	Patrol Procedures	3
30-504-342	Investigations	2
30-504-343	OMVWI/SFST	1
30-504-345	Police-Fit to Serve	2
30-504-346	Scenario Evaluation	1
	SEMESTER TOTAL	17
	TOTAL CREDITS	17

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-504-337 POLICING IN AMERICA
...students learn rules and procedures of Academy; various elements of Criminal Justice System and the Role of Law Enforcement. Students explore belief systems, social pressures, moral problems, decision making.

30-504-338 LEGAL CONTEXT ...students will learn the structure of Criminal Justice System including criminal procedure, arrest, use of force, search, and seizure, the limits on law enforcement activity, classification and elements of crimes.

30-504-339 TACTICAL SKILLS ...students will learn the basis for and the limits to use of force by Wisconsin officers. The specific techniques for intervention will range from empty hands to use of firearms.

30-504-340 RELATIONAL SKILLS
...students write law enforcement reports, role of communication while developing specific skills/strategies for handling emotionally disturbed people, legal basis for emergency placements, testifying in court, community policing strategies.

30-504-341 PATROL PROCEDURES
...students study Wisconsin traffic laws & how to enforce. Investigation of traffic crashes, crash scene management. Emergency vehicle operation, pursuit guidelines, conducting legal basis vehicle contacts. Arrest procedures, OWI, Emergency Medical Services.

30-504-342 INVESTIGATIONS ...students learn techniques, procedures for interviewing and interrogating. Learn to recognize and handle evidence, the correct law enforcement response to a victim of crime, statutory elements and procedures for sensitive crimes.

30-504-343 OMVWI/SFST ...students will learn to recognize and interpret evidence of OMVWI violation, administer and interpret standardized field sobriety tests, make appropriate enforcement decisions, prepare arrest reports and complete associated paperwork.

30-504-345 POLICE-FIT TO SERVE
...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

30-504-346 SCENARIO EVALUATION
...uses scenarios developed by the WI DOJ to evaluate core abilities critical to success in law enforcement: decision making; tactical skills; emergency management; investigative skills; and written/interpersonal communication.

Dental Assistant
Program Code 315081
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description

The Dental Assistant program prepares students for a professional career in Dental Assisting. Upon graduation the student will be proficient in assisting during patient care in a dental office. The program is designed to provide students with the skills and knowledge necessary to become a valuable member of the dental team.

Program Outcomes

- Collect diagnostic and treatment data.
- Manage infection and hazard control.
- Perform clinical supportive treatments.
- Take diagnostic radiographs.
- Perform dental laboratory procedures.
- Provide patient oral health instruction.
- Assist in managing medical emergencies.
- Model professional behaviors, ethics, and appearance.
- Carry out dental office procedures.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience

- Students will be required to purchase personal protection equipment/clothes, pay for liability insurance for dental clinical experience courses, provide their own transportation to the dental office, and attend a two-day dental convention in Chicago or Milwaukee.
- Students are required to complete an American Heart Association Health Care Provider CPR course during their first semester.
- Complete physical/dental examinations and Hepatitis vaccination prior to second semester Dental Assistant Clinical.

Accreditation

The Dental Assistant program is accredited by the American Dental Association-Commission on Dental Accreditation.

Board/Certification Examinations

Graduates of the program are eligible and encouraged to take the national certification exam offered by the Dental Assisting National Board (DANB), (312) 642-3368.

Employment Potential

The program prepares graduates to work with dentists as they examine and treat patients. Dental assistants may carry out a variety of laboratory, clinical, and office duties, such as patient scheduling and bookkeeping functions. Dental assistants typically work in general or specialty dental offices. Some dental assistants may work for insurance companies, dental lab studios, or dental supply companies. The dental assistant may also find employment with federal agencies such as the Veterans Administration, US Public Health Services, the Armed Forces, or a state, county, or city health facility.

Graduates may find employment as a:

- Dental Assistant
- Dental Office Manager
- Dental Laboratory Assistant
- Dental Laboratory Technician
- Dental Treatment Coordinator
- Maxillofacial Dental Assistant
- Endodontic Dental Assistant
- Prosthodontic Dental Assistant
- Dental Receptionist
- Dental Practice Manager
- Dental Sales Representative
- Orthodontic Dental Assistant
- Pediatric Dental Assistant
- Periodontic Dental Assistant

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment, or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or minimum individual ACT scores of Math: 14; Reading: 19; and English: 19 must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 84. Remediation options are available to reach required scores. Proof of remediation must be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory program orientation.
- Submit Caregiver Background Check paperwork.

Suggested Skills for Success

- Students are expected to have entry-level computer and keyboarding skills. It is recommended that students complete basic computer skills coursework if deficient in this area.
- A science background with emphasis in Advanced Biology and Anatomy and Physiology is highly recommended.

Curriculum

The Dental Assistant Technical Diploma is a one-year, three-semester program. Upon graduation, a student will have completed 32 credits.

The second and third semesters are 14 weeks on campus and three weeks off campus for clinical experience.

Start dates for the first semester are June and August.

FIRST SEMESTER

Catalog No.	Description	Credits
* 10-508-101	Dental Health Safety	1
* 31-508-304	Dental & General Anatomy	2
* 31-508-307	Dental Assistant Professional	1
	SEMESTER TOTAL	4

SECOND SEMESTER

* 10-508-103	Dental Radiography	2
* 10-508-113	Dental Materials	2
* 10-508-120	Dental Office Management	2
* 31-508-302	Dental Chairside	5
* 31-508-306	Dental Assistant Clinical	3
** 31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	15

THIRD SEMESTER

* 31-508-308	Dental Chairside Advanced	5
* 31-508-309	Dental Laboratory Procedures	4
* 31-508-310	Dental Radiography - Advanced	1
* 31-508-311	Dental Assistant Clinical-Adv	2
** 31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	13
	TOTAL CREDITS	32

CURRICULUM NOTE

* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team.

** Students may take Communicating-Writing (31-508-385) and Communicating-Effectively (31-801-386) any semester.

The following courses will transfer into the Dental Hygiene Associate Degree program:

- 10-508-101, Dental Health Safety
- 10-508-103, Dental Radiography Application
- 10-508-113, Dental Materials
- 10-508-120, Dental Office Management

It is recommended that students interested in pursuing an associate degree should take 10-801-136, English Composition 1 OR 10-801-196, Oral/Interpersonal Communications, which replaces both 31-801-385 and 31-801-386.

Scholarships

The Brown-Door-Kewaunee Dental Society, the Northeast Wisconsin Dental Assistant Association, and the NWTC Dental Assistant Program offer four scholarships: (2) $500.00, (1) $200.00, and (1) $150.00, to students in their second semester of study in the Dental Assistant program. Criteria include financial need, grade point average, and attendance. NWTC also has other scholarships available to students.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-508-101 DENTAL HEALTH SAFETY ...prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. (Prerequisite: Accepted into the Dental Hygiene or Dental Assistant Programs)

10-508-103 DENTAL RADIOGRAPHY APPLICATIONS ...prepares dental auxiliary students to operate x-ray units and expose bitewing, periapical, extra oral, and occlusal radiographs. Emphasis is placed on protection against x-ray hazards. Students also process, mount, and evaluate radiographs for diagnostic value. In this course students demonstrate competency on a manikin. In addition, students expose bitewing radiographs on a peer, role-play patient. (Prerequisites: 10-508-101, Dent Health Safety AND 10-508-102, Oral Anat & Hist OR 31-508-304, Dental and General Anat)

10-508-113 DENTAL MATERIALS ...prepares dental auxiliary students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginate impressions on manikins and clean removable appliances. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy)

10-508-120 DENTAL OFFICE MANAGEMENT ...prepares dental auxiliary students to manage telephones, appointments, recall systems, and inventory. Students also develop the skills need to process accounts receivable and payable, collections, and third party reimbursements. (Prerequisite: 10-508-103, Dental Radiography)

31-508-302 DENTAL CHAIRSIDE ...prepares dental assistant students to chart oral cavity structures, dental pathology, and restorations and to assist a dentist with basic dental procedures including examinations, pain control, amalgam restoration, and cosmetic restoration. Students will also develop the ability to educate patients about preventive dentistry, brushing and flossing techniques, and dental procedures, using lay terminology. Throughout the course, students will apply decoding strategies to the correct use and interpretation of dental terminology. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; Corequisite: 10-508-113, Dental Materials)

31-508-304 DENTAL & GENERAL ANATOMY ...prepares dental assistant students to apply fundamentals of general and dental anatomy to informed decision-making and to professional communication with colleagues and patients. (Corequisites: 10-508-101, Dental Health Safety; 31-508-307, Dental Asst Professionalism)

31-508-306 DENTAL ASSISTANT CLINICAL ...students apply skills developed in Dental and General Anatomy, Dental Health Safety, Dental Chairside, Dental Materials, Dental Radiography, and Professionalism in a clinical setting with patients. Emphasizes integration of core abilities and basic occupational skills. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; 31-508-307, Dental Assistant Professionalism; Corequisites: 31-508-302, Dental Chairside; 10-508-113, Dental Materials; 10-508-103, Dental Radiography Applications)

31-508-307 DENTAL ASSISTANT PROFESSIONALISM ...prepares dental assistant students for professional success in a dental practice or another dental health care environment. Students develop professional appearance and image. More importantly, they learn to work within ethical guidelines and legal frameworks. In preparation for entering the work force, dental assistants customize or develop their portfolios and lay out an ongoing professional development plan. (Corequisites: 10-508-101, Dental Hygiene Safety; 31-508-304, Dental & General Anatomy)

31-508-308 DENTAL CHAIRSIDE - ADVANCED ...prepares dental assistant students to adapt chairside skills to assisting with dental specialties as they are performed in general practice. Focuses on pediatric dentistry, orthodontics, oral maxillofacial surgery, endodontics, periodontic, and prosthodontics. Students will also develop the ability to assist with sealants, perform coronal polishing, and apply topical fluoride and topical anesthetics. (Prerequisites: 31-508-302, Dental Chairside; 31-508-306, Dental Assistant Clinical; Corequisite: 31-508-309, Dental Lab Procedures)

31-508-309 DENTAL LABORATORY PROCEDURES ...prepares Dental Assistant students to produce alginate impressions and fabricate diagnostic models, oral appliances, temporary restorations, and custom trays. Students also polish oral appliances. (Prerequisites: 31-508-304, Dental & Gen Anatomy; 10-508-113, Dental Materials; Corequisite: 31-508-308, Dental Chairside-Advanced)

31-508-310 DENTAL RADIOGRAPHY-ADVANCED ...builds on principles and skills developed in Dental Radiography. Students expose full mouth series, extra-oral and specialized radiographs on adult and child patients. Emphasis is placed on protection against x-ray hazards. Students will also process, mount, and evaluate radiographs for diagnostic value. In addition, they will use radiographs to explain dental health and treatment plans to patients. (Prerequisite: 10-508-103, Dental Radiography Applications; Corequisite: 31-508-311, Dental Assistant Clinical Advanced)

31-508-311 DENTAL ASSISTANT CLINICAL - ADV ...students apply skills developed in Dental Chairside - Advanced, Dental Lab Procedures, Dental Radiography - Advanced, and Dental Office Procedures in a clinical setting with patients. Emphasizes integration of core abilities and basic and advanced occupational skills. (Prerequisite: 31-508-306, Dent Asst Clinical; Corequisites: 31-508-308, Dental Chairside Advanced; 31-508-309, Dental Lab Procedures; 31-508-310, Dental Radiography Advanced; 10-508-120, Dental Office Management)

Dental Hygienist
Program Code 105081
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Dental Hygienist program prepares students to perform oral prophylaxis, apply preventive agents, expose radiographs, and teach patients oral care.

Program Outcomes
- Incorporate into dental hygiene practice professional laws, regulations and policies established by the licensing state and regulatory agencies.
- Model dental hygiene professional code of ethics in a rapidly changing environment.
- Pursue lifelong professional growth and development through self-directed learning, participation in professional organizations, and continuing education.
- Counsel clients/patients to reduce health risks.
- Provide community oral health services in a variety of settings.
- Manage infection and hazard control.
- Assess data on all aspects of patient/client health using methods consistent with dental hygienist scope of practice and legal principles.
- Formulate a comprehensive dental hygiene care plan in collaboration with the client and other health professionals.
- Provide preventive and therapeutic services that promote oral health according to the needs of the patient/client.
- Evaluate the effectiveness of the implemented client/patient dental hygiene care plan and modify as needed.
- Evaluate the effectiveness of the implemented clinical and educational services and modify as needed.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
Students will be required to purchase a uniform, instruments, pay for liability insurance, and cover any other expenses related to clinical experiences.

Accreditation
The Dental Hygienist program is accredited by the American Dental Association-Commission on Dental Accreditation
211 East Chicago Avenue
Chicago, IL 60611-2678
(312) 440-2500

Employment Potential
A registered Dental Hygienist may practice dental hygiene in a health department, private practice, long term care facility, or school. Graduates may find employment on a part-time or full-time basis.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Dental Hygiene Instructor
- Public Health Dental Hygienist
- Dental Laboratory Technician
- Dental Sales
- Dental Insurance Review Analyst

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)
- Two semesters high school, or one semester of college Algebra, Advanced Math, Biology, and Chemistry. All required courses must be completed with a "C" or better.
- Applicants with documentation of completion of General Anatomy and Physiology, with a "B" or better, will receive priority standing among that year's applicant pool.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT (minimum of Math 18; Reading 21; English 21) must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 90; Arithmetic: 80; Sentence Skills: 90; Algebra: 60. Remediation options are available to reach required scores. Proof of remediation must be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring Program Orientation.
- Complete physical and dental examinations within three months before entering program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Submit Caregiver Background Check paperwork.

Board/Certification Examinations
Prior to licensure as a Registered Dental Hygienist, a student is required to pass the Dental Hygiene National Board Examination and the Central Regional Dental Testing Exam.

Curriculum
The Dental Hygienist Associate Degree is a two-year, two-summer, six-semester program. Upon graduation, a student will have completed 70 credits.

SUMMER SEMESTER
Catalog No.	Description	Credits
* 10-508-101	Dental Health Safety	1
* 10-806-177	Gen Anatomy & Physiology	4
* 10-806-186	Intro to Biochemistry	4
	SEMESTER TOTAL	9

FIRST SEMESTER
* 10-508-102	Oral Anatomy, Embry, Histology	4
* 10-508-105	Dental Hygiene Process 1	4
* 10-508-107	Dental Hygiene Ethics & Profes	1
10-801-136	English Composition 1	3
* 10-806-197	Microbiology	4
	SEMESTER TOTAL	16

SECOND SEMESTER
* 10-508-103	Dental Radiography	2
* 10-508-106	Dental Hygiene Process 2	4
* 10-508-108	Periodontology	3
* 10-508-109	Cariology	1
* 10-508-111	General & Oral Pathology	3
	SEMESTER TOTAL	13

SUMMER SEMESTER
* 10-508-110	Nutrition and Dental Health	2
	SEMESTER TOTAL	2

THIRD SEMESTER
* 10-508-112	Dental Hygiene Process 3	5
* 10-508-113	Dental Materials	2
* 10-508-114	Dental Pharmacology	2
* 10-508-115	Community Dental Health	2
10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	17

FOURTH SEMESTER
* 10-508-116	Dental Pain Management	1
* 10-508-117	Dental Hygiene Process 4	4
10-809-172	Race Ethnic & Diversity	3
10-809-196	Intro to Sociology	3
	Elective	2
	SEMESTER TOTAL	13
	TOTAL CREDITS	70

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team.

SUGGESTED ELECTIVES
DH-Dental Career Transition, 10-508-118
DH-Dental Hygiene Board Review, 10-508-119
Spanish for the Dental Team, 10-802-103

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-508-101 DENTAL HEALTH SAFETY ...prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. (Prerequisite: Accepted into the Dental Hygiene or Dental Assistant Programs)

10-508-102 ORAL ANATOMY, EMBRYOLOGY AND HISTOLOGY ...prepares Dental Hygienist students to apply detailed knowledge about oral anatomy to planning, implementation, assessment, and evaluation of patient care. Students identify distinguishing characteristics of normal and abnormal dental, head, and neck anatomy and its relationship to tooth development, eruption and health. (Prerequisites: 10-806-177, General Anatomy & Physiology, 10-508-101, Dental Health Safety)

10-508-103 DENTAL RADIOGRAPHY APPLICATIONS ...prepares dental auxiliary students to operate x-ray units and expose bitewing, periapical, extra oral, and occlusal radiographs. Emphasis is placed on protection against x-ray hazards. Students also process, mount, and evaluate radiographs for diagnostic value. In this course students demonstrate competency on a manikin. In addition, students expose bitewing radiographs on a peer, role-play patient. (Prerequisites: 10-508-101, Dent Health Safety AND 10-508-102, Oral Anat & Hist OR 31-508-304, Dental and General Anat)

10-508-105 DENTAL HYGIENE PROCESS 1
...introduces Dental Hygiene students to the basic technical/clinical skills required of practicing Dental Hygienists including use of basic dental equipment, examination of patients, and procedures within the dental unit. Under the direct supervision of an instructor, students integrate hands-on skills with entry-level critical thinking and problem-solving skills. The course also reinforces the application of Dental Health Safety skills. (Prerequisites: 10-806-186, Intro to Biochemistry; 10-508-101, Dental Health Safety; Corequisite: 10-508-102, DH-Oral Anatomy, Embry & Histology)

10-508-106 DENTAL HYGIENE PROCESS 2
...this clinical course builds on and expands the technical/clinical skills student dental hygienists began developing in Dental Hygiene Process I. Under the direct supervision of an instructor, students apply patient care assessment, planning, implementation, and evaluation skills to provide comprehensive care for perio case type 0, I, and II patients. (Prerequisite: 10-508-105, DH-Dental Hygiene Process 1)

10-508-107 DENTAL HYGIENE ETHICS & PROFESSIONALISM ...helps student dental hygienists develop and apply high professional and ethical standards. Students apply the laws that govern the practice of dental hygiene to their work with patients, other members of a dental team and the community. Emphasis is placed on maintaining confidentiality and obtaining informed consent. Students enhance their ability to present a professional appearance. (Prerequisite: Accepted in the Dental Hygienist Program)

10-508-108 PERIODONTOLOGY ...this course prepares student dental hygienists to assess the periodontal health of patients, plan prevention and treatment of periodontal disease, and to evaluate the effectiveness of periodontal treatment plans. Emphasis is placed on the recognition of the signs and causes of periodontal disease and on selection of treatments modalities that minimize risk and restore periodontal health. (Prerequisites: 10-806-197, Microbiology; 10-806-186, Intro to Biochemistry; 10-508-102, DH Oral Antmy, Histlogy & Embrylgy; Corequisites: 10-508-111, DH-Gen & Oral Pathology; 10-508-103, Dental Radigrphy App; 10-508-106, DH-Dental Hygiene Proc 2)

10-508-109 CARIOLOGY ...this course focuses on the characteristics and contributing factors of dental decay. Dental Hygiene students help patients minimize caries risk by developing treatment plans, communicating methods to patients, and evaluating treatment results. (Prerequisites: 10-806-186, Intro to Biochemistry; 10-806-197, Microbiology; Corequisite: 10-508-106, Dental Process 2)

10-508-110 NUTRITION AND DENTAL HEALTH
...prepares student dental hygienists to counsel patients about diet and its impact on oral health. Students learn to distinguish between balanced and unbalanced diets and to construct diets that meet the needs of patients with compromised dental/oral health. Students also learn to counsel patients about the effect of eating disorders on dental health. (Prerequisites: 10-508-109, DH-Cariology; 10-806-186, Intro to Biochemistry)

10-508-111 GENERAL & ORAL PATHOLOGY
...this course prepares the student dental hygienist to determine when to consult, treat or refer clients with various disease, infection or physiological conditions. Students learn to recognize the signs, causes, and implications of common pathological conditions including inflammatory responses, immune disorders, genetic disorders, developmental disorders of tissues and cysts, oral tissue trauma, and neoplasm of the oral cavity. (Prerequisites: 10-508-102, Oral Anatomy, Embryology & Histology; Corequisite: 10-508-103, Dental Radiography Applications)

10-508-112 DENTAL HYGIENE PROCESS 3
...this clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process II. In consultation with the instructor, students apply independent problem-solving skills in the course of providing comprehensive care for perio case type 0, I, II, and III patients. Dental Hygiene Process 3 introduces root detoxification using hand and ultra-sonic instruments, manipulation of files, selection of dental implant prophylaxis treatment options, and administration of chemotherapeutic agents. Students also adapt care plans in order to accommodate patients with special needs. (Prerequisites: 10-508-106, Dental Hygiene Process 2; 10-508-108, Periondontology; 10-508-109, Cariology; 10-508-110, DH-Nutrition & Dental Health)

10-508-113 DENTAL MATERIALS ...prepares dental auxiliary students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginate impressions on manikins and clean removable appliances. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy)

10-508-114 DENTAL PHARMACOLOGY ...prepares student dental hygienists to select safe and effective patient premedication, local anesthetic, chemo therapeutic and anti-microbial agents within the scope of dental hygiene practice. Students will also learn to recognize potential pharmacological contraindications for specific patients and to take measures to avoid negative impact or alert other members of the dental team to possible negative impact. (Prerequisites: 10-806-186, Intro to Biochemistry; 10-806-197, Microbiology; Corequiste: 10-508-112, Dental Hygiene Process 3)

10-508-115 COMMUNITY DENTAL HEALTH
...this course prepares the Dental Hygienist student to play a proactive role in improving the dental health of community members of all ages. Students perform and interpret dental health research to determine community dental health needs, they also participate in the development, implementation and evaluation of a community dental health program. (Corequisite: 10-508-112, Dental Hygiene Process 3)

10-508-116 DENTAL PAIN MANAGEMENT
...this course prepares the student dental hygienist to work within the scope of dental hygiene practice to manage pain for dental patients. Students learn to prevent and manage common emergencies related to administration of local anesthesia, prepare the armamentarium, and administer local anesthesia. The course also addresses the recommendation of alternative pain control measures. (Prerequisites: 10-508-102, Oral Anatomy, Embryology & Histology; 10-508-114, Dental Pharmacology; 10-508-112, Dental Hygiene Process 3)

10-508-117 DENTAL HYGIENE PROCESS 4
...this clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process III. With feedback from the instructor, students manage all aspects of cases in the course of providing comprehensive care for perio case type 0 I, II, and III patients. Emphasizes maximization of clinical efficiency and effectiveness. Prepares student dental hygienists to demonstrate their clinical skills in a formal examination situation. (Prerequisite: 10-508-112, Dental Hygiene Process 3; Corequisite: 10-508-116, Dental Pain Management)

Diagnostic Medical Sonography
Program Code 105262
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Graduates perform routine sonographic (ultrasound) examinations of the body to include the abdomen, small parts, obstetrics, and gynecology. They work closely with physicians and may assist in the performance of invasive procedures.

Program Outcomes
- Provide patient care and education.
- Adhere to the professional code of ethics for sonographers.
- Communicate with members of the healthcare team.
- Utilize medical technology for sonography.
- Complete diagnostic sonographic exams.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances for clinical experience.
- Students are required to complete an American Heart Association Health Care Provider CPR course prior to clinical experiences. Students are required to maintain a current CPR card to comply with affiliating agency requirements.

Accreditation
The Diagnostic Medical Sonography program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP)
1361 Park Street
Clearwater, FL 33756
(727) 210-2350

Board/Certification Examinations
Graduates are qualified to take the Obstetric/Gynecology, Abdomen, and Physics Boards through the Association of Registered Diagnostic Medical Sonographers (ARDMS).

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Employment Potential
A graduate of the Diagnostic Medical Sonography program can choose to work in a variety of health care settings including clinics, hospitals, private practice physician offices, public health facilities and laboratories performing examinations in their areas of specialization.

Career advancement opportunities exist in education, administration, research, and in commercial companies as education/application specialists, sales representatives, and technical advisors.

Requirements for Program Application
- Completed application and all items listed below.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program application, an Academic Skills Assessment (Accuplacer) or ACT assessment with appropriate benchmark scores is necessary within the last three years. Academic Skills Assessment program benchmarks of Reading Comprehension: 90; Arithmetic: 70; Sentence Skills: 84; Algebra: 63, or minimum standard composite score of 22 on the ACT (minimum of Math 21, Reading 21, English 21), must be met prior to submitting an application. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Two semesters in high school, or one semester in college of Algebra, Biology, and Chemistry with a grade of "B" or better.
- Enrolled in Physics at time of application (see 'Requirements for Entry' for additional information).

Candidates submitting applications to the DMS program must also provide:
- Three references from professional or academic experiences submitted on NWTC forms.
- An essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay must explain why their interest in, and how their knowledge of the profession, experience in healthcare, specific skills and duties of a sonographer, and characteristics make them a good candidate for the program.

The DMS program follows a competitive enrollment process whereby candidate applications are reviewed by a selection committee. Candidates are ranked in the following categories: Assessment, Math/Science, Essays, References. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have the opportunity to re-apply.

Curriculum
The Diagnostic Medical Sonography Associate Degree is a two-year, two-summer, six-semester program. Upon graduation a student will have completed 70 credits.

SUMMER SEMESTER
Catalog No.	Description	Credits
10-804-195	College Algebra w Apps	3
10-806-143	College Physics 1	3
	SEMESTER TOTAL	6

FIRST SEMESTER
* 10-501-101	Medical Terminology	3
* 10-526-200	DMS-Intro to DMS	3
* 10-526-210	Cross Sectional Anatomy	2
* 10-526-221	Sonography Physics 1	3
* 10-806-177	Gen Anatomy & Physiology	4
	SEMESTER TOTAL	15

SECOND SEMESTER
* 10-526-207	Abdominal Sonography	4
* 10-526-208	OB/GYN Sonography 1	3
* 10-526-222	Sonography Physics 2	2
* 10-526-223	Vascular Imaging 1	3
* 10-806-179	Adv Anatomy & Physiology	4
	SEMESTER TOTAL	16

SUMMER SEMESTER
* 10-526-203	Scanning with Proficiency	1
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	4

THIRD SEMESTER
* 10-526-209	DMS Clinical Experience 1	2
* 10-526-211	Superficial Sonography	2
* 10-526-212	OB/GYN Sonography 2	3
* 10-526-213	DMS Clinical Experience 2	4
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	14

FOURTH SEMESTER
* 10-526-215	DMS Clinical Experience 3	4
* 10-526-216	DMS Clinical Experience 4	2
* 10-526-224	Vascular Imaging 2	3
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	70

CURRICULUM NOTE
* No final grade lower than "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

Requirements for Program Entry
- Two semesters in high school, or one semester in college of Physics with a grade of "B" or better.
- Attend mandatory spring program orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Submit Caregiver Background Check paperwork.
- Complete mandatory four-hour job shadow.

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY
...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-526-200 INTRO TO DMS ...introduces learners to the field of diagnostic medical sonography. Explores the duties and functions of the diagnostic medical sonographer as well as the historical background. Learners examine the other imaging modalities as they relate to sonography. Includes principles of patient care and legal and ethical issues related to sonography. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-203 SCANNING WITH PROFICIENCY ...provides learners with the opportunity to enhance their technical skills, accuracy, and proficiency in scanning the abdominal organs and female pelvis of the human body. This is a scanning course dedicated in continuing to prepare the learner for their first clinical experience. (Prerequisites: 10-526-207, Abdominal Sonography; 10-526-208, OB/GYN Sonography 1)

10-526-207 ABDOMINAL SONOGRAPHY
...prepares learners to perform ultrasounds of the abdominal organs including liver, gallbladder, biliary tree, pancreas, spleen, urinary tract, aorta and retroperitoneum. Practice scan sessions included. (Prerequisites: 10-526-200, Intro to DMS; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology. Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-208 OB/GYN SONOGRAPHY 1
...prepares learners to perform ultrasounds of the nongravid uterus and the first-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female reproductive system as well as intrauterine and ectopic pregnancies. (Prerequisites: 10-524-204, DMS-Intro to DMS; 10-526-205, DMS-Patient Care & Ethics; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology; Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-209 DMS CLINICAL EXPERIENCE 1
...opportunities to apply scanning skills in a clinical setting. Students concentrate on ultrasound examinations of the abdominal organs. Participation in this course will take place at a hospital or clinic. (Prerequisites: 10-526-206, DMS-Sono Physics & Instrument; 10-526-207, DMS-Abdominal Sonography; 10-526-208, DMS-OB/GYN Sonography 1)

10-526-210 CROSS SECTIONAL ANATOMY ...introduces cross sectional anatomy as related to Diagnostic Medical Sonography. Includes correlating images from other imaging modalities. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program.)

10-526-211 SUPERFICIAL SONOGRAPHY
...investigates superficial structure imaging. Includes anatomy, pathophysiology, and sonographic evaluation. Prepared learner to perform ultrasounds of the thyroid, breast, male reproductive system, musculoskeletal system, and GI tract. (Prerequisites: 10-526-207, DMS-Abdominal Sonography; 10-526-206, DMS-Sono Physics & Instrument; 10-526-210, DMS-Cross Sectional Anatomy)

10-526-212 OB/GYN SONOGRAPHY 2
...prepares learners to perform ultrasounds of the second and third-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female pelvis and the developing fetus. (Prerequisite: 10-526-208, DMS-OB/GYN Sonography 1)

10-526-213 DMS CLINICAL EXPERIENCE 2
...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during scanning procedures. (Corequisite: 10-526-209, DMS-DMS Clinical 1)

10-526-215 DMS CLINICAL EXPERIENCE 3
...provides further opportunity for students to expand their skills in a clinical setting. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel. (Prerequisite: 10-526-213, DMS-DMS Clinical 2)

10-526-216 DMS CLINICAL EXPERIENCE 4
...prepares the student to assume the role of a sonographer. This course enhances the student's scanning and employee skills through clinical practice. Serves as a transition between student and employee. (Corequisite: 10-526-215, DMS-DMS Clinical 3)

10-526-221 SONOGRAPHY PHYSICS 1
...introduces physics and instrumentation relevant to diagnostic medical sonography. Learners explore how principles of sound propagation in tissues create a sonographic image. (Prerequisite: 10-806-143, College Physics 1)

10-526-222 SONOGRAPHY PHYSICS 2
...continues the study of physics and instrumentation relevant to diagnostic medical sonography. The laboratory component of this course introduces the student to the concepts of ultrasound instrumentation, an introduction to ultrasonic scanning technique, and maintenance of ultrasound equipment. (Prerequisite: 10-526-221, Sonography Physics 1)

10-526-223 VASCULAR IMAGING 1
...introduces the principles of vascular sonographic imaging. Learners perform a variety of peripheral vascular arterial and venous duplex exams. (Prerequisites: 10-526-200, Intro to DMS; 10-526-210, Cross Sectional Anatomy; 10-526-221, Sonography Physics 1)

10-526-224 VASCULAR IMAGING 2
...prepares learners to perform abdominal vascular and physiologic peripheral vascular exams. (Prerequisite: 10-526-223, Vascular Imaging 1)

Diesel and Heavy Equipment Technician
Program Code 324121
Technical Diploma
Offered at the Sturgeon Bay campus. For information: (920) 746-4900. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Prepares students to service and repair diesel-powered equipment. Instruction covers repair of engine, engine systems driveline, steering, brakes, hydraulic systems, and chassis components.

Program Outcomes
- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine service fundamentals.
- Describe the mechanics of track drive systems.
- Perform required preventative maintenance.
- Use welding and machine tools.
- Maintain brake systems.
- Analyze electronic/electrical systems.
- Manage heating-AC systems.
- Interpret schematic drawings.
- Comprehend power train systems.
- Diagnose engine systems.
- Service vehicle systems.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Construction Equipment Technician: diagnoses, services, and repairs a variety of construction equipment such as track type tractors, wheel loaders, and back hoe loaders.

Engine Technician: diagnoses and repairs diesel engines.

Farm Equipment Technician: diagnoses, services, and repairs a variety of diesel-powered agricultural equipment.

Fuel Injection Technician: diagnoses, services, and repairs fuel injection systems.

Service Technician: performs preventive maintenance and regularly scheduled maintenance on equipment to keep it in service.

Truck Driver/Diesel Technician: owns or operates a small fleet and wants to perform his/her own regular and preventive maintenance.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Diesel Equipment Mechanic Instructor
- Diesel Shop Owner
- Sales Representative
- Shop Supervisor
- Technical Service Representative
- Truck Fleet Operator

Accreditation
The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians

The NWTC Diesel and Heavy Equipment Technician program is an AED Foundation (Associated Equipment Dealers) Certified Program.

Curriculum
The Diesel and Heavy Equipment Technician Technical Diploma is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 65 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
10-412-100	Diesel Lab Operations Tech	1
10-412-108	Inte Combust Eng Tech-Intro to	1
10-412-109	Diesel Engine Service-Fundamen	4
10-412-112	Diesel Electrical Systems 1 Te	3
10-412-146	Power Generation 1	2
10-804-107	College Mathematics	3
32-442-352	Welding-Metal Working Proc	2
	SEMESTER TOTAL	17

SECOND SEMESTER
10-412-120	Diesel-Chassis/Susp/Steer Tech	4
10-412-121	Diesel-Brake Systems Technolog	3
10-412-122	Diesel Preventive Maint Techno	4
10-412-123	Diesel-Elect Systems Technolog	3
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	15

THIRD SEMESTER
10-412-124	Diesel-Electric Eng System Tec	1
10-412-134	Diesel Engine Systems Technolo	4
10-412-136	Diesel-Mobile Hydraulic Sys Te	2
10-412-137	Diesel-Schematic Interpret Tec	2
10-412-138	Diesel-Track Drive Systems Tec	2
10-412-142	Diesel Equip Service/Maint Tec	3
10-419-169	Hydraulics Technology	2
10-458-100	CDL License Training	1
	SEMESTER TOTAL	17

FOURTH SEMESTER
10-412-140	Diesel Engine Troubleshoot Tec	4
10-412-141	Diesel-Power Trains Technology	5
10-412-145	Diesel-Refrig/AC Technology	3
10-809-197	Contemporary Amer Society	3
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	16
	TOTAL CREDITS	65

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-109 DIESEL ENGINE SERVICE TECHNOLOGY-FUNDAMENTALS ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

10-412-120 DIESEL-CHASSIS/SUSP/STEER TECHNOLOGY ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-121 DIESEL-BRAKE SYSTEMS TECHNOLOGY ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-122 DIESEL PREVENTIVE MAINT TECHNOLOGY ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpiller systems, and testing methods. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-136 DIESEL-MOBILE HYDRAULIC SYSTEM TECHNOLOGY ...mobile hydraulics system components safety, principles of operation, diagnosis, and service.

10-412-137 DIESEL-SCHEMATIC INTERPRET TECHNOLOGY ...electronic/ hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-138 DIESEL-TRACK DRIVE SYSTEMS TECHNOLOGY ...track shop safety, track drive component parts, system operation, inspection, system diagnoses, system repair, system service, and system maintenance. (Corequisite: 10-412-100, Diesel-Lab Operations)

10-412-140 DIESEL ENGINE TROUBLESHOOT TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-141 DIESEL-POWER TRAINS TECHNOLOGY ...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

10-412-142 DIESEL EQUIP SERVICE/ MAINT TECHNOLOGY ...shop safety; service manuals; preventive maintenance forms; federal inspection policy; preventive maintenance for trucks, trailers, engine brakes/ retarders, construction, and agricultural equipment; and electronic trouble shooting trees. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-146 POWER GENERATION 1 ...this course is designed to familiarize diesel Technician students with the basics of home standby and commercial generators. Electrical fundamentals, alternators, permanent magnet generators, circuit breakers, generator switchgear, auto transfer switches and automatic voltage regulators will be covered emphasizing on home standby and commercial use generators.

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not be limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

10-458-100 CDL LICENSE TRAINING ...this course is designed to prepare students for the Wisconsin Class A Commercial Drivers License (CDL) pre-trip inspection, air brake and skills test. Preparation will also be given for taking the State DOT written test including general knowledge, air brakes and combination vehicles.

Diesel Equipment Technology
Program Code 104121
Associate Degree
Offered at the Sturgeon Bay campus. For information: (920) 746-4900. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Prepares students to service and repair diesel powered equipment and prepare graduates for management, ownership, supervisory level positions and advanced educational options. Instruction incorporates repair of steering, brakes, hydraulic systems, and chassis components.

Program Outcomes
- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine service fundamentals.
- Perform required preventive maintenance.
- Maintain brake systems.
- Analyze electronic/electrical systems.
- Manage heating-A/C systems.
- Comprehend power train systems.
- Interpret schematic drawings.
- Diagnose engine systems.
- Service vehicle systems.
- Communicate effectively with the customer.
- Complete customer repair orders accurately.
- Organize a daily work schedule.
- Tabulate a daily time sheet of technician's repair work.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in math, science and technology education would be beneficial.
- Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Diesel and Heavy Equipment Technician: diagnoses, services, and repairs a variety of heavy equipment ranging from over-the-road trucks, off-road construction equipment, agricultural equipment, and potentially stationary power supply engines.

Related Specialist Technician: diagnoses, services, and repairs fuel injection systems, hydraulics systems, trailer service and other specialty areas.

Related Parts Support Manager: manages a parts department within a repair facility.

Industry Related Service Manager-Supervisor: manages technician performance, directs work flow, tracks work progress, coordinates service business profitability, reports to Operations level management.

Industry Related Sales Representative: sales position within the diesel and heavy equipment industry or support business to the industry.

Business Owner: owns own business related to the diesel and heavy equipment or support business.

Educational Trainer: with additional study and transfer to a four-year baccalaureate college, a graduate could pursue a four-year degree in secondary, post-secondary or technical training industry.

Accreditation
The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians.
The NWTC Diesel Equipment Technology program is an AED Foundation (Associated Equipment Dealers) Certified Program.

Curriculum
The Diesel Equipment Technology Associate Degree is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-412-100	Diesel Lab Operations Tech	1
10-412-108	Inte Combust Eng Tech-Intro to	1
10-412-109	Diesel Engine Service-Fundamen	4
10-412-112	Diesel Electrical Systems 1 Te	3
10-801-175	English Composition I	3
10-804-107	College Mathematics	3
	SEMESTER TOTAL	15

SECOND SEMESTER
Catalog No.	Description	Credits
10-412-120	Diesel-Chassis/Susp/Steer Tech	4
10-412-121	Diesel-Brake Systems Technolog	3
10-412-122	Diesel Preventive Maint Techno	4
10-412-123	Diesel-Elect Systems Technolog	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	17

THIRD SEMESTER
Catalog No.	Description	Credits
10-412-124	Diesel-Electric Eng System Tec	1
10-412-134	Diesel Engine Systems Technolo	4
10-412-136	Diesel-Mobile Hydraulic Sys Te	2
10-412-137	Diesel-Schematic Interpret Tec	2
10-419-169	Hydraulics Technology	2
10-458-100	CDL License Training	1
10-809-172	Race Ethnic & Diversity	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	18

FOURTH SEMESTER
Catalog No.	Description	Credits
10-412-140	Diesel Engine Troubleshoot Tec	4
10-412-141	Diesel-Power Trains Technology	5
10-412-145	Diesel-Refrig/AC Technology	3
10-801-197	Technical Reporting	3
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	68

Note
- A three- to five-page paper or specialty assignments are required for courses applied to an associate degree. Individual instructor requirements will be received at program orientation and listed in each course syllabus.
- Diesel program students are able to enroll in a five-credit Power Generation program enhancement certificate. Please call (920) 746-4919 for more details.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-109 DIESEL ENGINE SERVICE TECHNOLOGY-FUNDAMENTALS ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

10-412-120 DIESEL-CHASSIS/SUSP/STEER TECHNOLOGY ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-121 DIESEL-BRAKE SYSTEMS TECHNOLOGY ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-122 DIESEL PREVENTIVE MAINT TECHNOLOGY ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpiller systems, and testing methods. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-137 DIESEL-SCHEMATIC INTERPRET TECHNOLOGY ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-140 DIESEL ENGINE TROUBLESHOOT TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-141 DIESEL-POWER TRAINS TECHNOLOGY ...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not be limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

10-458-100 CDL LICENSE TRAINING ...this course is designed to prepare students for the Wisconsin Class A Commercial Drivers License (CDL) pre-trip inspection, air brake and skills test. Preparation will also be given for taking the State DOT written test including general knowledge, air brakes and combination vehicles.

Digital Media Technology
Program Code 102065
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Digital Media Technology Program prepares students to compete in a global digital workforce including content conception, creation, and implementation. Learners will develop multimedia production skills using digital audio and video recording and editing, digital photography, motion graphics, internet broadcasting (i.e., podcasting), and data transfer and conversion from analog to digital media. The program will provide learning opportunities for those desiring a business-related position or project-based entrepreneurial contract work.

Program Outcomes
- Create design for digital media.
- Perform internet broadcasting.
- Assemble a digital media portfolio.
- Produce animation for video.
- Create professional digital photography images.
- Create interactive digital interfaces.
- Operate digital media studio.
- Interface digital media into websites.
- Set the motion effects to 2D graphic designs.
- Write scripts.
- Conduct multi-track recording sessions.
- Compose audio scoring for video.
- Conduct live audio recording for video.
- Compose/edit/image both still and motion photography.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Computer familiarity and ability to use a keyboard and mouse.
- Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of the College Catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 51; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Program graduates may work in this evolving Digital Media Technology field, and will be needed by the media industry, as designers, developers, and technicians. For example, they will be hired or contracted as media creators and designers for video, interactive media, websites, and some will be new media entrepreneurs expanding applications for the media arts in the 21st century.

A graduate of this program will have the potential for employment in the following areas:

Digital Media Operator: develops multi-functional digital content for commercial, educational, and entertainment establishments. Researches and analyzes digital media utilization and functionality. Reviews digital media trends and effectiveness in marketing, advertising, training, creative services, and communications fields.

Motion Graphic Artist: performs detailed graphic compositing for broadcast, web, DVDs and mobile devices. Coordinates production of static and motion visuals and presentations for business, training, recreational and other applications.

Video Editor: assists post-production department by performing asset management and non-linear video editing duties. Performs script-based synchronization of audio, video, special effects, titles and graphics.

Multimedia Production Assistant: assists in production, from concept through post-production of digital media client-based projects. Operational workflow duties include assisting with concept planning, storyboarding, scriptwriting, production, editing, and delivery.

Freelance Digital Media Producer: initiates entrepreneurial work with self-established client base. Acts as a full-service digital media content creator and consultant. Provides customer with promotional, training, communication and other content for internal and external delivery methods and mediums.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Digital Media Operations Manager
- Internet Broadcaster
- Sound Recordist/Editor
- Video Production Coordinator
- Videographer
- Video Department Manager

The following certificates/technical diplomas may be applied toward this program:
- 902031, Digital Photography
- 902032, Digital Photography Advanced
- 902063, Film and Digital Broadcast
- 902061, Internet Broadcasting
- 902062, Recording and Audio Engineering

Curriculum
The Digital Media Technology Associate Degree is a two-year, four-semester program. Learners are encouraged to meet with an NWTC Academic Advisor to create a program plan. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-206-100	Digital Audio Overview	3
10-206-107	Internet Broadcasting	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16

SECOND SEMESTER
Catalog No.	Description	Credits
10-203-104	Photography-Digital	3
10-206-101	Soundtracks and Music OR	3
10-206-120	Music Production-Logic Studio	3
10-206-108	Internet Broadcasting-Advanced	3
10-206-154	Macintosh Video Editing	3
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
	SEMESTER TOTAL	18

THIRD SEMESTER
Catalog No.	Description	Credits
10-102-100	Bus and Info Tech Occup Prep	1
10-206-125	DVD Authoring	3
10-206-183	Video Photography	3
10-206-185	Macintosh Video Editing-Adv	3
10-809-172	Race Ethnic & Diversity	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
10-206-104	Digital Media Trends/Business	3
10-206-109	Digital Studio Operations	3
10-206-174	Motion Graphics for Video	3
10-206-199	Dig Media Internship Practicum OR	2
10-206-197	Dig Media Field Research	2
10-809-195	Economics	3
	Elective	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

CURRICULUM NOTE
Macintosh-Intro is a corequisite to any first semester course in the Digital Media Technology degree. It is also suggested that learners, regardless of age or professional experience, should take the Macintosh-Intro class if they are not familiar with the Macintosh OSX version operating system. This course is designed to help familiarize the learner with the Macintosh computer environment used in the Digital Media Technology degree.

SUGGESTED ELECTIVES
Any course beginning with catalog number 10-206 or 10-203

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-203-104 PHOTOGRAPHY-DIGITAL ...capturing digital images, exposure, shutter speed, aperture, composition, camera operations, lenses, lighting, camera accessories, types of photography, photo challenges, importing, editing and storing images. Access to a digital camera required.

10-206-100 DIGITAL AUDIO OVERVIEW ...concept of analog to audio conversion, processing sound in digital domain, MIDI music production, CD audio production, video soundtracks, enhanced podcast audio, basic of time code and format conversion.

10-206-101 SOUNDTRACKS AND MUSIC ...utilize software applications to prepare audio for video including environment sounds, sound effects and Foley, dialogue replacement, and soundtrack creation. (Prerequisite: 10-206-100, Digital Audio Overview)

10-206-104 DIGITAL MEDIA TRENDS IN BUSINESS ...research, present analysis of, industry usage of current/emerging digital media technologies including implementation, usage, delivery. Plan, organize, include new digital media concepts and strategies in business plans and operation.(Prerequisites: 10-206-185, Macintosh Video Editing-Advanced; 10-206-108 Internet Broadcasting-Advanced)

10-206-107 INTERNET BROADCASTING ...plan, prepare and organize digital media content for online distribution and access. Pre- through post-production techniques including technical and commercial aspects of digital media content for internet delivery.

10-206-108 INTERNET BROADCASTING-ADVANCED ...advanced pre- through post-production techniques including technical/commercial aspects of digital media content for internet delivery. Business fundamentals, target marketing, copy writing, commercial distribution, user-generated content (UGC) service/s. (Prerequisite: 10-206-107, Internet Broadcasting)

10-206-109 DIGITAL STUDIO OPERATIONS ...research, implement, maintain workflow/equipment used in a modern digital media studio. Prepare functioning environment for audio, video, photography production including capture, editing, delivery, archiving. (Prerequisite: 10-206-108, Internet Broadcasting-Advanced)

10-206-120 MUSIC PRODUCTION WITH LOGIC STUDIO ...covers the basic concepts of melody, harmony, rhythm and form as well as orchestration, and the process of building an arrangement, one instrument at a time, using Logic Studio. (Prerequisite: 10-206-100, Digital Audio Overview)

10-206-125 DVD AUTHORING (DVD Studio Pro) ...setup and create interactive DVD productions. Other topics covered include: Bit-Budgeting, Storyboarding, Video and Audio Encoding, Menu Creation, and Delivery. (Prerequisite: 10-206-154, Macintosh Video Editing)

10-206-154 MACINTOSH VIDEO EDITING ...media types including audio, video and graphics to create original commercial, educational and entertainment productions for delivery to broadcast, CD/DVD and web. Final Cut Pro, LiveType and Photoshop software. (Prerequisite: 10-111-101, Macintosh-Image Editing)

10-206-174 MOTION GRAPHICS FOR VIDEO ...creating high impact, dynamic effects for video productions utilizing digital media including still and motion video, graphics, text and applied filters. Apple Motion, Adobe After Effects and Photoshop software. (Prerequisites: 10-206-154, Macintosh Video Editing; 10-111-101, Macintosh-Image Editing; 10-111-103, Macintosh-Intro)

10-206-183 VIDEO PHOTOGRAPHY ...technical aspects of capturing motion images including composition, lighting, exposure, filtration, and camera selection. Develop skills in pre-production through post-poduction of motion photography projects.

10-206-185 MACINTOSH VIDEO EDITING-ADVANCED ...(Final Cut Studio) video production, planning/scripting, digital transfers, advanced editing techniques, color correction/output. Media, camera (SD, HD), file formats, encoding, compression/ delivery methods. Production of portfolio quality, commercially viable video. (Prerequisite: 10-206-154, Macintosh Video Editing)

10-206-197 DIGITAL MEDIA FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-206-199 DIGITAL MEDIA INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Early Childhood Education

Program Code 103071
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Early Childhood Education program prepares students for a professional career in early childhood education, including preschool, childcare, and exceptional education settings from birth to age eight. It is designed to provide students with the skills and knowledge necessary in the field of child development.

Program Outcomes
- Apply child development theory to practice.
- Cultivate relationships with children, family, and the community.
- Assess child growth and development.
- Use best practices in teaching and learning.
- Demonstrate professionalism.
- Integrate health, safety, and nutrition practices.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Demonstrated suitability to the early childhood profession as indicated by completion of a personal skills inventory.
- Complete physical examination within three months prior to Practicum course. Maintain proper immunizations.
- Completed an American Heart Association CPR course prior to program entry. Students are required to maintain a current CPR card on a two-year renewal cycle.
- Mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.
- Demonstrated proficiency in basic skills through a course placement assessment.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 55; Sentence Skills: 73; Algebra: NA. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Early Childhood Teacher in Preschool or Group Childcare Centers/Head Start Teacher: plans and implements daily activities with concern for health, safety, and welfare for a designated group of children; supervises the assistant childcare teacher; administers instructional program to young children that promotes their physical, social, psychological, and intellectual development; and provides a flexible balance of active and quiet activities, individual and group activities, indoor and outdoor activities, free choice, guided activities and conduct developmental assessments.

Family Childcare Provider/Teacher/Owner: same functions as above only in a home setting.

Early Childhood Program Director, Day Camp Director, Child Care Center Administrator, Child Care Center Manager: The above positions may require responsibilities of one or more of the following items: responsible to the board of directors for day-to-day operations of entire school, including programming, facility, fiscal responsibilities, working knowledge of professional organizations for higher standards, providing customer service, and all human resource functions such as: hiring/firing, supervision, training, and evaluation of staff according to state requirements.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (2009 WISCONSIN ACT 76). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry and annually for the remainder of the program. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee practicum placement or guarantee graduation within typical program timing.

Note
- A student who does not meet the requirements for program entry is required to consult an NWTC counselor about ways to make up any deficiencies through testing or course work.
- It is necessary to show good health as evidenced by a medical examination within three months prior to beginning practicum class.
- Students will be required to wear a NWTC issued name tag, provide their own transportation to assigned sites and cover any other expenses related to practicum experiences. Students may be expected to travel distances.
- Availability: Student Teaching hours will span between 6 a.m.-6 p.m. with the majority of the hours occurring in the morning and afternoon.
- Completion of a Wisconsin Technical Skills attainment (TSA) portfolio is required to graduate from this program.

The following certificates/technical diplomas may be applied toward this program:
- 903077, Early Childhood: Advanced
- 903075, Early Childhood: Foundation
- 903076, Early Childhood: Intermediate
- 903070, Early Childhood: Licensing Basic Ages 0-2
- 9030710, Early Childhood: Licensing Basic Ages 3-5
- 903078, Early Childhood: Premier
- 9030711, Early Childhood: The Preschool
- 903073, Early Childhood: Infant Toddler

Curriculum

The Early Childhood Education Associate Degree is a two-year program. Upon graduation, a student will have completed 69 credits. Courses are offered online, accelerated, and blended, and may be taken in any order as long as prerequisites are met. Below is a suggested timeline.

FIRST SEMESTER

Catalog No.	Description	Credits
10-307-148	ECE: Foundations of ECE	3
10-307-151	ECE: Infant & Toddler Dev	3
10-307-167	ECE: Hlth Safety & Nutrition	3
** 10-307-174	ECE: Practicum 1	3
* 10-307-178	ECE: Art Music & Lang Arts	3
10-801-136	English Composition 1	3
	SEMESTER TOTAL	18

SECOND SEMESTER

10-307-179	ECE: Child Development	3
10-307-188	ECE: Guiding Child Behavior	3
** 10-307-192	ECE: Practicum 2	3
* 10-307-194	ECE: Math Science & Soc St	3
10-809-188	Developmental Psychology	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-307-166	ECE: Curriculum Planning	3
10-307-187	ECE: Children w Diff Abilities	3
10-307-195	ECE: Family & Community Rel	3
** 10-307-197	ECE: Practicum 3	3
*** 10-804-123	Math w Business Apps	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-307-198	ECE: Admin an ECE Program	3
** 10-307-199	ECE: Practicum 4	3
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
	Elective	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	69

CURRICULUM NOTE

* Blended online class requires two/three Saturday visits to the Green Bay Campus

** Practicum courses require student teaching in the community, in addition to course work. NWTC Faculty arranges practicum settings for/with students. The required hours in the placement are as follows: Practicum 1, 2, 3 and 4: 108 hours. It is recommended that students take one practicum per semester. Students are required to achieve a grade of "C" or higher in the practicum courses to continue in or graduate from tis program. Read more about Practicums online.

*** If a student is considering pursuing a 4-year degree, Intermediate Algebra w/Apps, 10-804-118, should be taken in place of Math w/Bus Apps, #10-804-123.

SUGGESTED ELECTIVES

- 10-307-108, ECE: Food/Nutrition Issues
- 10-307-109, ECE: School Age
- 10-307-110, ECE: Teacher/Fam Communication
- 10-307-113, Infant/Toddler Group Care
- 10-307-171, ECE: Behavior/Emotional Challenges
- 10-307-172, ECE: Special Health Care Needs

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-307-148 ECE: FOUNDATIONS OF EARLY CHILDHOOD ... integrate strategies that support diversity and anti-bias perspectives; summarize early childhood education settings; identify components of a quality program; summarize responsibilities of early childhood professionals; explore early childhood curriculum models.

10-307-151 ECE: INFANT/TODDLER DEVELOPMENT ...infant and toddler development in an early childhood education setting. Development of infants/toddlers; prenatal conditions and development; child development theories; heredity and the environment; culturally and developmentally appropriate environments.

10-307-166 ECE: CURRICULUM PLANNING ...curriculum planning in early childhood. Strategies that support diversity and anti-bias perspectives; critical role of play; developmentally appropriate environment; caregiving routines; promoting child development and learning; early childhood curriculum models. (Prerequisite: 10-307-194, ECE: Math, Science, Social Studies OR 10-307-178, ECE: Art, Music, Language Arts)

10-307-167 ECE: HEALTH/SAFETY/ NUTRITION ...health, safety, and nutrition in early childhood settings. Anti-bias perspectives; governmental regulations and professional standards; safe, healthy, and nutritionally sound early childhood programs; child abuse/neglect mandates; SIDS risk reduction.

10-307-174 ECE: PRACTICUM 1 ...learn/practice skills in a child care setting. Includes documenting behavior, exploring diversity, implement activities developed by the cooperating teacher, practicing caregiving routines, and positive professional and interpersonal skills.

10-307-178 ECE: ART/MUSIC/LANGUAGE ARTS ...beginning curriculum development in art, music, and language arts. Role of play; developmentally appropriate environment; promote child development; caregiving routines as curriculum; language, literature, and literacy activities, art/music, movement activities.

10-307-179 ECE: CHILD DEVELOPMENT ...child development in the early childhood education setting. Social, cultural, and economic influences on child development; child development theories; development of children age three-eight; child development research; heredity and environment.

10-307-187 ECE: CHILDREN WITH DIFFERING ABILITIES ...differing abilities in early childhood settings. Anti-bias perspectives, inclusion, ADA/IDEA, typical and exceptional development; physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders; community and professional resources; IEP/IFSP, adapt curriculum, cultivate partnerships.

10-307-188 ECE: GUIDING CHILDREN'S BEHAVIOR ...strategies to guide children's behavior in the early childhood setting. Anti-bias perspectives, guidance principles, factors affecting behavior, guidance strategies, individual needs, guidance philosophy.

10-307-192 ECE: PRACTICUM 2 ...learn/practice skills in a child care setting. Growth/Development, support diversity, implement student developed activity plans, guidance strategies, professional behaviors, caregiving routines as curriculum, positive interpersonal skills with adults. (Prerequisite: 10-307-174, ECE: Practicum 1)

10-307-194 ECE: MATH/SCIENCE/SOCIAL STUDIES ...beginning curriculum development in math, science, social studies. Support diversity, role of play, developmentally appropriate environment, activity plans that promote learning, create appropriate math, science and social studies activities.

10-307-195 ECE: FAMILY/COMMUNITY RELATIONSHIPS ...relationships with family/community in early childhood. Diversity and anti-bias perspectives in families and community; family patterns, trends, relationships; communication strategies; relationships with families; advocate for children/families; community resources.

10-307-197 ECE: PRACTICUM 3 ...learn/practice skills in a child care setting. Assess growth/development; early childhood standards; curriculum; developmentally appropriate environment; guidance strategies; professional behaviors/practices; lead caregiving routines; interpersonal skills with children/adults. (Prerequisite: 10-307-192, ECE: Practicum 2)

10-307-198 ECE: ADMINISTERING EARLY CHILDHOOD EDUCATION PROGRAM ...administration of an early childhood program. Diversity and anti-bias perspectives; ECE facilities, program, finances, aspects of personnel supervision, laws and regulations, advocacy.

10-307-199 ECE: PRACTICUM 4 ...learn/practice skills in a child care setting. Growth/development, assessment, anti-bias perspectives, professional behavior/practices; curriculum, relationships, evaluating programs for quality, professional options in early childhood. (Prerequisite: 10-307-197, ECE: Practicum 3)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Electrical Engineering Technology

Program Code 106621
Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description

Electrical Engineering Technology (EET) prepares students to test, maintain, and troubleshoot electrical and electronic devices as found in machinery, computers, and communications. The program consists of two tracks: a transfer track, which includes calculus, for those students planning to transfer to a four-year EET program, and a general track, for those students not planning to transfer. The EET transfer track graduate will be able to transfer to a four-year bachelor's degree program in Electrical Engineering Technology.

Program Outcomes

- Practice workplace safety standards.
- Communicate using common technical terminology and graphic symbology both orally and in writing.
- Write technical documents.
- Develop an industry acceptable team centered work ethic.
- Use Office Suite software package tools.
- Apply mathematics to the field of electricity and electronics.
- Measure electrical parameters in DC and wideband AC circuits.
- Apply circuit theorems to AC/DC RLC circuits.
- Apply Boolean theorems to basic digital circuits.
- Develop and describe transfer characteristics of frequency sensitive linear circuits.
- Predict operation of circuits containing active components.
- Describe the various digital modulation techniques.
- Identify characteristics of power electrical devices and circuits.
- Implement project using embedded computer systems.
- Describe wireless communication techniques.
- Analyze automatic electrical machine control circuits.
- Use tools for electrical/electronic test and assembly tasks.
- Apply transistor models to analyze frequency dependent circuits.
- Apply programmable logic controller functions to accomplish basic digital operations.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Electrical Engineering Technology on the College Math assessment is 63.
- To complete the program in a minimum of two years, students must have satisfied or completed Intermediate Algebra with Applications, 10-804-118, before entering the first semester of the program. This is equivalent to two years of High School Algebra and one year of High School Geometry. Intermediate Algebra with Applications, 10-804-118, is a prerequisite for the first semester courses DC 2: Circuits, 10-660-105; and Trigonometry with Applications, 10-804-196.
- Other beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Electrical/Electronic Development Technician: assists engineers in the design and development of experimental and prototype equipment and products.

Electrical/Electronic Maintenance Technician: services and programs in-plant automatic control equipment, computers, robots, and other equipment.

Electrical Test Technician: tests, troubleshoots, and inspects electrical/electronics products (quality control testing).

Electrical/Electronics Technician: maintains equipment including motor controllers, cables, communication equipment, computers, security systems, CNC equipment, programmable controllers, robots, and automatic production equipment; works with engineers in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

With additional education and/or work experience, graduates may find other opportunities for employment.

Curriculum

The Electrical Engineering Technology Associate Degree is a two-year, four-semester program consisting of two tracks. Students take one of the two. Upon graduation, a student will have completed 70 credits.

ALL STUDENTS COMPLETE FIRST SEMESTER

Catalog No.	Description	Credits
10-620-140	Machine Wiring and Safety	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-103	Digital 3: Registers	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Circuit Theorems	1
10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
10-809-195	Economics	3
	TOTAL CREDITS	16

ALL STUDENTS COMPLETE SECOND SEMESTER

10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-660-111	Electronics 2: Trans-Basic	1
10-660-112	Electronics 3: Op-Amps-Basic	1
10-660-113	Digital 4: ALU	1
10-660-114	Digital 5: Characteristics	1
10-660-115	Digital 6: Systems	1
10-801-197	Technical Reporting	3
10-804-195	College Algebra w Apps	3
	TOTAL CREDITS	15

GENERAL TRACK SECOND SEMESTER

	Elective	3
	TOTAL CREDITS	3

TRANSFER TRACK SECOND SEMESTER

10-806-143	College Physics 1	3
	TOTAL CREDITS	3

ALL STUDENTS COMPLETE THIRD SEMESTER

10-605-160	Linear Electronics 1: BJT Amps	1
10-605-161	Linear Electronics 2: JFET Amp	1
10-605-162	Linear Electronics 3: Filters	1
10-605-163	Micro 1: Introduction	1
10-605-164	Micro 2: Technique	1
10-605-165	Micro 3: Interfaces	1
10-605-170	Datacomm 1: Introduction	1
10-605-171	Datacomm 2:Pulse Code Mod	1
10-605-172	Datacomm 3: Delta Modulation	1
10-662-112	DC/AC 3	3
10-809-172	Race Ethnic & Diversity	3
	TOTAL CREDITS	15

GENERAL TRACK THIRD SEMESTER

10-806-143	College Physics 1	3
	Elective	1
	TOTAL CREDITS	4

TRANSFER TRACK THIRD SEMESTER

10-804-198	Calculus 1	4
	TOTAL CREDITS	4

ALL STUDENTS COMPLETE FOURTH SEMESTER

10-605-166	Micro 4: Advanced Interfacing	1
10-605-167	Micro 5: Intermediate	1
10-605-180	Analog Comm 1: Noise Effects	1
10-605-181	Analog Comm 2: AM/SSB	1
10-605-182	Analog Comm 3: FM Systems	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-662-124	Electronic Circuit Analysis	3
10-809-198	Intro to Psychology	3
	TOTAL CREDITS	13

GENERAL TRACK FOURTH SEMESTER

10-605-168	Micro 6: Advanced	1
10-620-159	Power Electronics 3: Drives	1
	Elective	2
	TOTAL CREDITS	4

TRANSFER TRACK FOURTH SEMESTER

10-804-181	Calculus 2	4
	TOTAL CREDITS	4
	TOTAL PROGRAM CREDITS	70

SUGGESTED ELECTIVES

Machine Tool Processes 1, 10-420-171
Machine Tool Processes 2, 10-420-172
Machine Fabrication 1, 10-442-150
Machine Fabrication 2, 10-442-151
Mechanics 1: Basic, 10-620-121
Mechanics 2: Intermediate, 10-620-122
Mechanics 3: Systems, 10-620-123
Fluids 1: Basic Pneumatics, 10-620-100
Fluids 2: Basic Hydraulics, 10-620-101
Rigging Systems 1, 10-620-105

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-605-160 LINEAR ELECTRONICS 1: BJT AMPLIFIERS ...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers. (Prerequisites: 10-660-109, AC 3: RLC Circuits; 10-660-112, Electronics 3: Op-Amps-Basic)

10-605-161 LINEAR ELECTRONICS 2: JFET AMPLIFIERS ...characteristics of the junction field-effect (JFET) transistor amplifier and types of commonly used field effect transistor amplifiers. (Corequisite: 10-605-160, Linear Electronics 1: BJT Amplifiers)

10-605-162 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS ...review the characteristics of the passive RL, RC, RLC active filters, introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-163 MICROPROCESSORS 1: INTRODUCTION ...review of number, use of simulation software, fetch and execute, and fundamentals of assembly language programming.

10-605-164 MICROPROCESSORS 2: TECHNIQUE ...complex addressing modes, fields in programming, pseudo-ops, programming technique, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-165 MICROPROCESSORS 3: INTERFACES ...basic assembly language programming for operating a SCI, ADC, Timer and SPI, and continued use of simulation software. (Prerequisite: 10-605-164, Micro 2: Technique)

10-605-166 MICROPROCESSORS 4: ADVANCED INTERFACING ...writing rituals for switches, LEDs, LCDs, ADCs, keypads, stepper motors, DC motors, and infrared LEDs and the continued use of simulation software. (Prerequisite: 10-605-165, Micro 3: Interfaces)

10-605-167 MICROPROCESSORS 5: INTERMEDIATE ...designing and writing intermediate level programs in assembly language. The study will include the use of simulation software. (Prerequisite: 10-605-166, Micro 4: Advanced Interfacing)

10-605-168 MICROPROCESSORS 6: ADVANCED ...designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

Electrical Engineering Technology course descriptions continue on next page ...

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Electrical Engineering Technology
continued

10-605-168 MICROPROCESSORS 6: ADVANCED ...designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

10-605-170 DATACOMM 1: INTRODUCTION ...introduction to pulse amplitude modulation, pulse amplitude modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-660-103, Digital 3: Registers)

10-605-171 DATACOMM 2: PULSE CODE MODULATION ...introduction to pulse code modulation, pulse code modulation principles, sampling and signal reconstruction, analog to digital conversion, and digital to analog conversion. (Prerequisite: 10-605-170, Data Comm 1: Introduction)

10-605-172 DATACOMM 3: DELTA MODULATION ...introduction to delta modulation, delta modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-605-171, Data Comm 2: Pulse Code)

10-605-180 ANALOG COMMUNICATIONS 1: NOISE EFFECTS ...characteristics of noise in communications systems and analyze amplitude modulation. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-605-181 ANALOG COMMUNICATIONS 2: AM/SSB ...characteristics of single sideboard transmission and receiving systems. (Prerequisite: 10-605-180, Analog Comm 1: Noise Effects)

10-605-182 ANALOG COMMUNICATIONS 3: FM SYSTEMS ...characteristics of frequency modulation transmission and receiving systems. (Prerequisite: 10-605-181, Analog Comm 2: AM/SSB)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, compound DC, AC induction, and specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Corequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-660-112 ELECTRONICS 3: OP-AMPS-BASIC ...introduction to the circuit characteristics of integrated operational amplifiers. The various connections, inverting, non-inverting and comparator will be studied as well as specialized applications such as summers and filters. (Corequisite: 10-660-111, Electronics 2:Transistor-Basic)

10-660-113 DIGITAL 4: ALU ...unsigned and signed arithmetic using binary numbers, the construction of adder circuits and subtraction circuits, and the analysis of a computer ALU is studied. (Prerequisite: 10-660-103, Digital 3: Registers)

10-660-114 DIGITAL 5: CHARACTERISTICS ...propagation delay, rise time, fall time, setup and hold time, asynchronous timing considerations, Schmitt trigger devices, one-shots and astable multivibrators, and synchronous counter design are studied. (Corequisite: 10-660-113, Digital 4: ALU)

10-660-115 DIGITAL 6: SYSTEMS ...interconnection of Programmable Logic Controllers with various digital circuits. Study of interface circuits, noise reduction and real time digital circuit control with additional emphasis on system simulation. (Prerequisite: 10-660-114, Digital 5: Characteristics)

10-662-112 DC/AC 3 ...apply Thevenins and Nortons Theorems in practical problems involving complex AC circuits. Solve complex AC circuits using Mesh and Nodal techniques and describe power flow in complex AC circuits. (Prerequisite: 10-660-109, AC 3: RLC Circuits)

10-662-124 ELECTRONIC CIRCUIT ANALYSIS... develop equations for and analyze transistor amplifier circuits for bias, small signal gain, and transfer function including frequency response using Bode plot graphs of first order functions. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-804-181 CALCULUS 2 ...continuation of Calculus I covering integration techniques, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, Infinite series including Maclaurin, Taylor, and Fourier. (Prerequisite: 10-804-198, Calculus I)

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Electrical Power Distribution

Program Code 314132
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description

Electrical Power Distribution prepares students to install, maintain, and operate electrical systems to supply electric energy to residential, commercial, and industrial customers, and joint gas and electric underground generation facilities.

Program Outcomes

- Assist in the construction of electric transmission systems.
- Opportunity to secure a commercial driver's license (CDL).
- Relate electrical theory to electric power systems.
- Work comfortably at heights.
- Climb poles and towers.
- Be knowledgeable in personal protective equipment to safely perform specific work.
- Identify sub-station components.
- Install underground electric systems.
- Operate electrical power distribution equipment.
- Troubleshoot power distribution and transmission systems.
- Communicate technical information.
- Assist in the construction of power distribution systems.
- Identify methods of electrical generation.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be able to obtain a commercial driver's license.
- Place satisfactorily in the NWTC mathematics examination. Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 86; Arithmetic: 66; Sentence Skills: 84; Algebra: 54. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment as a Line Technician, Lead Line Technician, Line Technician Supervisor, Cable TV Line Technician, Telephone Line Technician, Technician in an Electricity Generating Plant, or Installer/Maintainer of Underground Systems. Graduates in those jobs will perform construction, operations, and maintenance work on the electric power system and equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Line Coordinator
- Line Apprentice
- Safety Advisor
- Distribution Construction Designer
- Distribution Dispatcher
- Substation Electrician

Note

Students who have completed the Electrical Power Distribution technical diploma program have the opportunity to fulfill the requirements for a Utility Management certificate and/or apply these credits toward a Leadership Development and/or an Individualized Technical Studies associate degree.

Curriculum

The Electrical Power Distribution Technical Diploma is a one-year, three-semester program. This program starts in June. Upon graduation, a student will have completed 33 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-413-330	Line Elec Field Trng 1	5
31-413-353	Electricity-Basic	1
31-413-362	Line Elec-Safety 1	1
	SEMESTER TOTAL	9

SECOND SEMESTER

10-103-121	Micro: Word-Intro	1
31-413-335	Line Elec-Const Standards	1
31-413-336	Line Elec Field Trng 2-A	5
31-413-337	Line Elec Field Trng 2-B	5
31-413-355	Electricity-Linepersons	2
31-413-364	Line Elec-Safety 2	1
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	16

THIRD SEMESTER

10-103-131	Micro: Excel-Intro	1
31-413-332	Line Elec Field Trng 3	5
31-413-361	Lineman-Safety/First Aid	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	8
	TOTAL CREDITS	33

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-413-330 LINE ELECTRICIAN FIELD TRAINING 1 ...pole climbing, care of equipment/vehicle operation, setting and removing poles/line layout, pole framing, guys and anchors, conductor string, sagging, tying/transformers, operation, application, construction/safety.

31-413-332 LINE ELECTRICIAN FIELD TRAINING 3 ...protective grounds, transmission, substation operations and maintenance, metering tools, transmission hot stick use and safety, and stray voltage precautions, street lighting, and use of tree trimming methods and tools. (Prerequisite: 31-413-337, Line Electrician Field Training 2-B)

31-413-335 LINE ELECTRICIAN-CONSTRUCTION STANDARDS ...distribution standards for overhead, underground, primary, secondary, clearances, work practices, material and safe work practices.

31-413-336 LINE ELECTRICIAN FIELD TRAINING 2-A ...transformer installation, underground installation and equipment, operation and maintenance; protective equipment use; map/diagram reading, code clearance requirements. (Prerequisite: 31-413-330, Line Electrician Field Training 1)

31-413-337 LINE ELECTRICIAN FIELD TRAINING 2-B ...operation, maintenance; regular, capacitor and OCR operation and maintenance, and pole top and buck truck rescue techniques. (Corequisite: 31-413-336, Line Electrician Field Training 2-A)

31-413-353 ELECTRICITY-BASIC ...basic electricity: fundamental laws and circuit analysis. (Prerequisite: Accepted into Electrical Power Distribution)

31-413-355 ELECTRICITY-LINEPERSONS ...electric power/energy, three-phase voltage generation, three-phase circuit power, transformer operation principles, transformer connections, and safety practices in high voltage applications. (Prerequisite: 31-413-353, Electricity-Basic)

31-413-361 LINEMAN-SAFETY/FIRST AID ...first aid procedures, CPR, safety code analysis, recordkeeping, safety on the job, safety/accident analysis. (Prerequisite: Accepted into Electrical Power Distribution)

31-413-362 LINE ELECTRICIAN-SAFETY 1 ...general rules, definitions, applications, responsibility, reporting accidents, injuries, hand and power tools, ladders, scaffolds, handling materials, operation of company equipment. (Prerequisite: Accepted into Electrical Power Distribution)

31-413-364 LINE ELECTRICIAN-SAFETY 2 ...code and working clearances for electrical, line clearing, right-of-way maintenance, protective equipment, underground systems, and substations. (Prerequisite: 31-413-362, Line Electrician-Safety 1)

Electricity

Program Code 314131
Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Electricity prepares students to install, maintain, and service basic electrical equipment used in residential, commercial, and industrial settings.

Program Outcomes

- Perform safe work practices.
- Apply National and Wisconsin State Electrical Codes to electrical installations.
- Install, maintain, and troubleshoot residential, commercial, and industrial electrical systems.
- Perform diagnostic testing on electrical systems.
- Apply basic calculations to electrical systems and installations.
- Demonstrate the operation of AC and DC motors.
- Install and troubleshoot basic motor control systems.
- Interpret electrical diagrams.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Place satisfactorily in the NWTC mathematics and algebra examinations.
- Students should have mastered high school algebra skills and have a desire to learn advanced algebra and trigonometry. For a description of Algebra, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34, Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Construction Electrician: installs and services conduit, wire, cable, and equipment in new and existing residential, commercial, and industrial structures.

Industrial Maintenance Electrician: installs, maintains, and troubleshoots motors, motor controls, lighting, and other electrical systems in an industrial plant.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Electrical Construction Supervisor
- Electrical Engineering Technician
- Journey-Level Electrician
- Electrical Contractor
- Electrical Maintenance Supervisor
- Voice Data Video Installer

Curriculum

The Electricity Technical Diploma is a two-semester program broken down into four quarters of nine-week courses. Upon graduation, a student will have completed 28 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
31-413-314	DC Circuits	2
31-413-316	Residential Elec Code 1	1
31-413-319	Residential Wiring 1	3
31-413-326	Residential Elec Code 2	1
31-413-329	Residential Wiring 2	3
31-413-334	AC Circuits	2
31-449-301	Electrical Safety	1
31-804-312	Math-Algebra/Trades	1
	SEMESTER TOTAL	14

SECOND SEMESTER

Catalog No.	Description	Credits
31-413-327	Commercial Wiring Techniques	2
31-413-328	Motors/Transformers	2
31-413-339	Industrial Controls	3
31-413-345	Industrial Code	1
31-413-346	Commercial Elec Code	1
31-413-349	Electric Motor Control	3
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	14
	TOTAL CREDITS	28

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-413-314 DC CIRCUITS ...electron theory, electromotive force sources, voltage, current, resistance, power, Ohm's Law, series-parallel circuits and test equipment. (Corequisite: 31-804-312, Math-Algebra/Trades)

31-413-316 RESIDENTIAL ELECTRICAL CODE 1 ...National Electrical Code, residential circuits, conductor sizes, branch circuits, box fill calculations, switch control, branch circuit overcurrent protection and calculations, and ground fault circuit interrupters.

31-413-319 RESIDENTIAL WIRING 1 ...residential electrical installation, national electrical code applications, residential circuits, box selection, conductor selector, receptacles, GFCI protection and switch control. (Corequisite: 31-413-316, Residential Elec Code 1, 31-449-301, Electrical Safety)

31-413-326 RESIDENTIAL ELECTRICAL CODE 2 ...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 31-413-316, Residential Electrical Code 1)

31-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low-voltage wiring. (Corequisite: 31-413-346, Commercial Electrical Code OR 31-448-364, Marine Electrical Codes)

31-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Prerequisite: 31-413-334, AC Circuits)

31-413-329 RESIDENTIAL WIRING 2 ...residential circuit installations, National Electrical Code, application of residential design and layout, small appliance circuits and special purpose outlets. (Corequisites: 31-413-319, Residential Wiring 1; 31-413-326, Residential Electrical Code 2, 31-449-301, Electrical Safety)

31-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, Diodes and silicon controlled rectifiers. (Corequisites: 31-804-312, Math-Algebra/Trades; 31-413-314, DC Circuits)

31-413-339 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control (Corequisite: 31-413-328, Motors and Transformers)

31-413-345 INDUSTRIAL CODE ...three-phase and single-phase systems, motor branch circuits, overcurrent and overload protections, power factor, hazardous locations, harmonics and National Electric Code. (Corequisite: 31-413-346, Commercial Elec Code; 31-413-349, Electric Motor Control)

31-413-346 COMMERCIAL ELECTRICAL CODE ...commercial building plans and specifications, computing electrical loads and branch circuits, emergency systems, raceways, conduit fill, power and lighting circuits, motor & appliance circuits. (Prerequisite: 31-413-326, Residential Electrical Code 2)

31-413-349 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Corequisite: 31-413-339, Industrial Controls)

31-449-301 ELECTRICAL SAFETY ...standard first aid, CPR and OSHA 10-hour course as it relates to the electrical field.
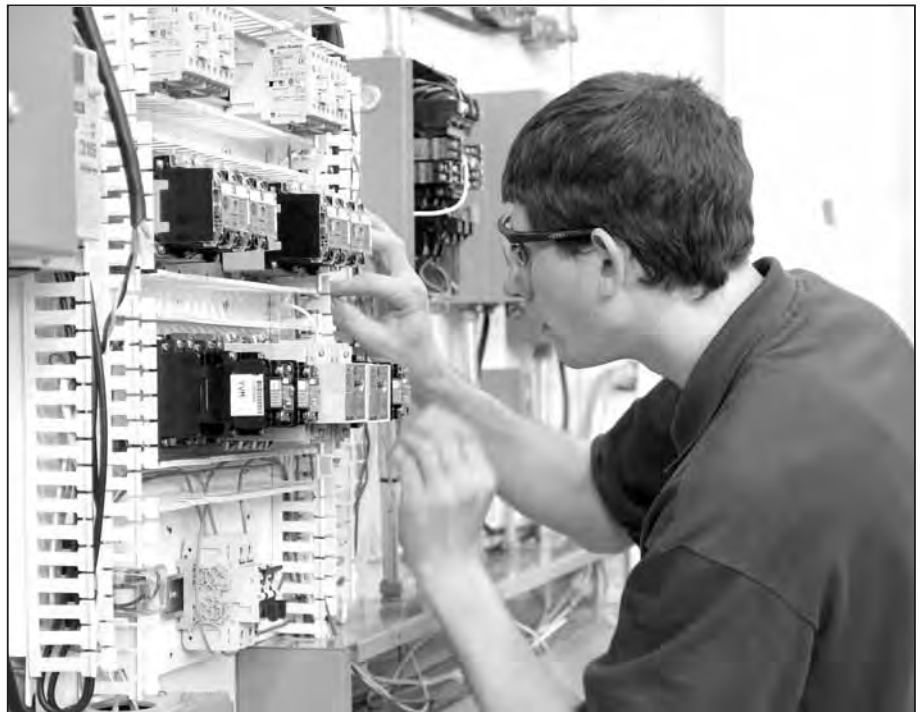
Electro-Mechanical Technology

Program Code 106201
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (888) 385-6982.

Program Description

Electro-Mechanical Technology prepares students for employment as plant-floor and field service technicians who assemble, install, troubleshoot, repair and modify mechanical, electrical systems; including programmable controllers found on industrial machinery.

Program Outcomes

- Understand and apply knowledge of electricity, electronics, hydraulics, and electric motors and mechanics.
- Read technical drawings, schematics, and diagrams.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Perform electrical, mechanical, and fluid measurements by properly selecting tools and test equipment.
- Perform electrical/mechanical assembly/ disassembly, repair, or calibrate components by properly selecting tools and equipment and following procedures.
- Understand the overall operation and control of machines.
- Understand the basic fastening skills related to machine fabrication and assembly requirements.
- Apply electrical skills to troubleshoot control and operator panels.
- Apply programming languages to the control of single programmable controllers and industrial networks.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.
- Perform safe work practices.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Electro-Mechanical Technology on the College Math assessment is 50.
- Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Automated Equipment Technician: maintains and repairs electronically-controlled automatic production equipment including servo hydraulics equipment, programmable controllers, motor controllers, and robotic equipment.

Electro-Mechanical Technician: maintains and repairs electro-mechanical equipment including drive systems, position sensors, cabling, and automatic production equipment; works with mechanical and/or electrical engineers to install and evaluate electro-mechanical systems; and builds mock-ups of production equipment.

Electronics Technician: maintains and repairs electronic equipment including cables, communication equipment, computers, security systems, and CNC equipment; works with electronics engineers in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services, repairs, and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

Fluid Power Technician: maintains and repairs industrial hydraulic/pneumatic production equipment, hydraulic/pneumatic control systems, hydraulic/pneumatic robots, and servo and proportional hydraulic systems.

Installation Technician: installs and sets up automated production equipment, robotic systems, and production control systems.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Electro-Mechanical Service Supervisor
- Electro-Mechanical Shop Supervisor
- Electro-Mechanical Systems Test Engineer
- Field Service Supervisor
- Maintenance Group Manager
- Service Control Technician

The following certificates/technical diplomas may be applied toward this program:
904621, Industrial Maintenance

For complete program information,
go to: www.nwtc.edu

Curriculum

The Electro-Mechanical Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 64 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-420-171	Machine Tool Processes 1	1
10-442-150	Machine Fabrication 1	1
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	17

SECOND SEMESTER

10-420-172	Machine Tool Processes 2	1
10-442-151	Machine Fabrication 2	1
10-620-140	Machine Wiring and Safety	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
	SEMESTER TOTAL	16

THIRD SEMESTER

10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-620-123	Mechanics 3: Systems	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-664-105	Automation 6: PLC	1
10-664-151	Automation 8: HMI	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-620-105	Rigging Systems 1	1
10-620-166	Fluids 4: Advanced Hydraulics	1
10-620-170	Robotics - Introduction to	1
10-620-189	Machine Integrated Techniques	3
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	64

SUGGESTED ELECTIVES

Automation CAD 1, 10-664-109
Automation CAD 2, 10-664-110

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-171 MACHINE TOOL PROCESSES 1 ...semi-precision and precision measurement, vertical and horizontal saws, principles of drilling and drilling machines.

10-420-172 MACHINE TOOL PROCESSES 2 ...engine lathes and engine lathe operations, milling machines and milling operations, grinding and finishing. (Prerequisite: 10-420-171, Machine Tool Processes 1)

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-442-151 MACHINE FABRICATION 2 ...a study of fabrication processes including shears, saws, rolls, braces and benders. (Corequisite: 10-442-150, Machine Fabrication 1)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Corequisite: 10-605-157, Power Electronics 1: Devices)

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system.

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt Drives, synchronous belt drives, lubrication, and alignment. (Prerequisite: 10-620-121, Mechanics 1: Basic)

10-620-123 MECHANICS 3: SYSTEMS ...application of correct couplings to mechanical systems, heavy-duty chain drives, maintenance of brakes and clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ... DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Electro-Mechanical Technology

continued

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, compound DC, AC induction, and specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-620-166 FLUIDS 4: ADVANCED HYDRAULICS ...components of hydraulic pump power, characteristics of fluid conductors, issues of hydraulic system maintenance, basics of hydraulic flow and pressure in pipelines, design a hydraulic system from a specification.

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of industrial robots. (Prerequisite: 10-664-160, Control 1: Discrete Systems OR 10-605-165, Micro 3: Interfaces)

10-620-189 MACHINE INTEGRATED TECHNIQUES ...application of machine fabrication techniques, automation products to manufacturing processes including PLC, drives, motors (Electric and Hydraulics), sensors. (Prerequisite: Completion of 3rd semester courses)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC System, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Prerequisite: 10-664-105, Automation 6: PLC)

For complete program information,
go to: www.nwtc.edu

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)
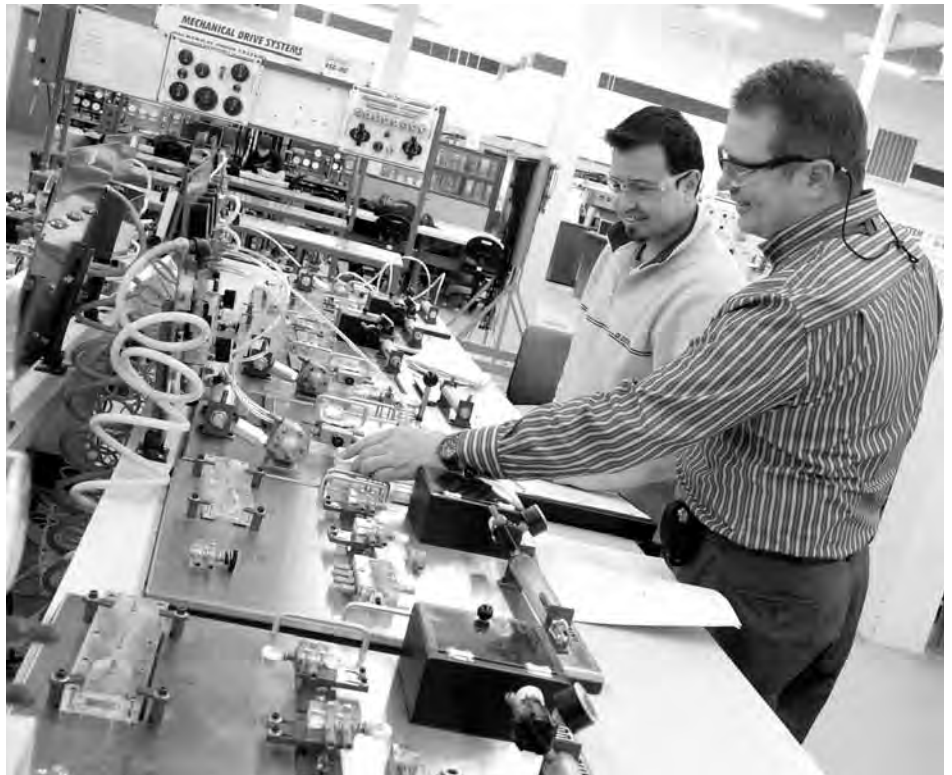
10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC drive system performance, specification of AC and DC drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Prerequisite: 10-664-163, Control 4: Drive Performance)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Prerequisite: 10-664-164, Control 5: Servo Systems)

Electronics (with optional Biomedical specialty)
Program Code 106051
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Electronics (with optional Biomedical specialty) program offers students the option between tracks specializing in biomedical or general electronics. The biomedical track prepares the student for a position as a technician for hospitals or medical equipment manufacturers. The general electronics track prepares the student to operate, test, maintain, and troubleshoot electronic equipment and work with research and design engineers.

Program Outcomes
- Describe the various digital modulation techniques.
- Identify power switching devices and circuits.
- Program microprocessor interface circuits.
- Measure electrical parameters of RF circuits.
- Describe wireless analog communication techniques.
- Implement a project using embedded computer systems.
- Measure wide-band circuit parameters.
- Describe transfer characteristics of frequency sensitive linear circuits.
- Analyze an ON/OFF machine control circuit.
- Predict operation of circuits containing active components.
- Identify the component and appropriate nomenclature of basic electronic symbols.
- Apply Boolean theorems to basic digital circuits.
- Apply circuit theorems to AC/DC RLC circuits.
- Use basic electronic tools.
- Work in teams.
- Develop an industry acceptable work ethic.
- Communicate both orally and in writing using common technical terminology.
- Write a technical document.
- Use office suite software package tools.
- Apply mathematics to the field of electronics.
- Use common test equipment to measure circuit parameters.
- Compare measured values to theoretical calculations.
- Practice workplace safety standards.
- Identify regulations and standards in communications related industries.

Biomedical Specialty Outcomes
- Understand anatomy and medical terminology.
- Analyze, troubleshoot and calibrate biomedical electronics equipment.
- Identify regulations and standards in health related industries.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Electronics (with optional Biomedical specialty) on the College Math assessment is 50.
- Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Additional Requirements for Students Pursuing the Biomedical Track
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27.) The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into health programs must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to clinical placement at the discretion of the clinical site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical placement, or guarantee graduation.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Electronic Development Technician: assists engineers in the design and development of experimental and prototype electronic equipment and products.

Electronic Maintenance Technician: services and programs in-plant automatic control equipment, computers, robots, and other electronic equipment.

Electronic Test Technician: tests, troubleshoots, and inspects electronics products (quality control testing).

Electronics Technician: maintains electronic equipment including motor controllers, cables, communication equipment, computers, security systems, CNC equipment, programmable controllers, robots, and automatic production equipment; works with an electronics engineer in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

Biomedical Equipment Technician, also called Biomedical Engineering Technicians or BMETs: constructs, tests, repairs, and maintains electromedical equipment of all sorts, including electrosurgical equipment, cardiovascular equipment, kidney dialysis machines, respirators, vital signs data equipment, telemetry transmitters and receivers, radiology equipment and nuclear medicine equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Computer Field Service Supervisor
- Electronics Production Superintendent
- Electronics Maintenance Supervisor

The following certificates/technical diplomas may be applied toward this program:
906052, Biomedical Electronics

For complete program information,
go to: www.nwtc.edu

Curriculum

The Electronics (with optional Biomedical specialty) Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

ALL STUDENTS COMPLETE FIRST SEMESTER

Catalog No.	Description	Credits
10-660-100	Electronic Fabrication - Intro	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-103	Digital 3: Registers	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Circuit Theorems	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
	TOTAL CREDITS	14

ELECTRONICS TECHNOLOGY FIRST SEMESTER

10-620-140	Machine Wiring and Safety	1
10-809-166	Intro to Ethics: Theory & App	3
	TOTAL CREDITS	4

BIOMEDICAL TECHNOLOGY FIRST SEMESTER

* 10-806-134	General Chemistry	4
	TOTAL CREDITS	4

ALL STUDENTS COMPLETE SECOND SEMESTER

10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-660-111	Electronics 2: Trans-Basic	1
10-660-112	Electronics 3: Op-Amps-Basic	1
10-660-113	Digital 4: ALU	1
10-660-114	Digital 5: Characteristics	1
10-804-196	Trigonometry w Apps	3
10-809-172	Race Ethnic & Diversity	3
	TOTAL CREDITS	14

ELECTRONICS TECHNOLOGY SECOND SEMESTER

	Elective	3
	TOTAL CREDITS	3

BIOMEDICAL TECHNOLOGY SECOND SEMESTER

* 10-501-101	Medical Terminology	3
	TOTAL CREDITS	3

ALL STUDENTS COMPLETE THIRD SEMESTER

10-605-160	Linear Electronics 1: BJT Amps	1
10-605-161	Linear Electronics 2: JFET Amp	1
10-605-162	Linear Electronics 3: Filters	1
10-605-163	Micro 1: Introduction	1
10-605-164	Micro 2: Technique	1
10-605-165	Micro 3: Interfaces	1
10-605-170	Datacomm 1: Introduction	1
10-605-171	Datacomm 2: Pulse Code Mod	1
10-605-172	Datacomm 3: Delta Modulation	1
10-801-136	English Composition 1	3
	TOTAL CREDITS	12

ELECTRONICS TECHNOLOGY THIRD SEMESTER

10-806-143	College Physics 1	3
	TOTAL CREDITS	3

BIOMEDICAL TECHNOLOGY THIRD SEMESTER

* 10-806-189	Basic Anatomy	3
	TOTAL CREDITS	3

ALL STUDENTS COMPLETE FOURTH SEMESTER

10-605-166	Micro 4: Advanced Interfacing	1
10-605-167	Micro 5: Intermediate	1
10-605-168	Micro 6: Advanced	1
10-605-174	Datacomm 5: Fiber Optics-Intro	1
10-605-175	Datacomm 6: Fiber Optics-Adv	1
10-605-180	Analog Comm 1: Noise Effects	1
10-605-181	Analog Comm 2: AM/SSB	1
10-605-182	Analog Comm 3: FM Systems	1
10-801-197	Technical Reporting	3
10-809-195	Economics	3
	TOTAL CREDITS	14

ELECTRONICS TECHNOLOGY FOURTH SEMESTER

10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-605-173	Datacomm 4: Digital Modulation	1
10-620-159	Power Electronics 3: Drives	1
	TOTAL CREDITS	4

BIOMEDICAL TECHNOLOGY FOURTH SEMESTER

* 10-605-106	Biomed Electronics 1	1
* 10-605-107	Biomed Electronics 2	1
* 10-605-108	Biomed Electronics 3	1
* 10-605-109	Biomed Electronics 4	1
	TOTAL CREDITS	4
	TOTAL PROGRAM CREDITS	68

CURRICULUM NOTE
* In order to successfully complete the Biomedical track, no final grade lower than a "C" is acceptable in any of the courses marked with an asterisk.

SUGGESTED ELECTIVES
Automation 3: PLC, 10-664-102
Automation 4: PLC, 10-664-103
Control 1: Discrete Systems, 10-664-160
Control 2: Process Systems, 10-664-161
Control 3: Motion Systems, 10-664-162
Control 4: Drive Performance, 10-664-163
Control 5: Servo Systems, 10-664-164
Control 6: Servo Systems, 10-664-165

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-605-106 BIOMED ELECTRONICS 1: SIGNALING ...the study will present the characteristics of biomedical electronics signaling and provide a survey of biomedical electronics signaling systems. (Prerequisites: 10-605-162, Linear Electronics 3: Filters; 10-605-172, Datacomm 3: Delta Modulation)

10-605-107 BIOMED ELECTRONICS 2: INSTRUMENTATION ...study will present the characteristics of biomedical electronics instrumentation and provide a survey of biomedical electronics instrumentation. (Prerequisite: 10-605-106, Biomed Electronics 1)

10-605-108 BIOMED ELECTRONICS 3: NETWORKING ...study will present the characteristics of biomedical electronics networking and provide a survey of biomedical electronics networking systems. (Prerequisite: 10-605-107, Biomed Electronics 2)

10-605-109 BIOMED ELECTRONICS 4: CALIBRATION ...study will present the characteristics of biomedical electronics calibration and provide a survey of biomedical electronics calibration. (Prerequisite: 10-605-108, Biomed Electronics 3)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Corequisite: 10-605-157, Power Electronics 1: Devices)

10-605-160 LINEAR ELECTRONICS 1: BJT AMPLIFIERS ...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers. (Prerequisites: 10-660-109, AC 3: RLC Circuits; 10-660-112, Electronics 3: Op-Amps-Basic)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

10-605-161 LINEAR ELECTRONICS 2: JFET AMPLIFIERS ...characteristics of the junction field-effect (JFET) transistor amplifier and types of commonly used field effect transistor amplifiers. (Corequisite: 10-605-160, Linear Electronics 1: BJT Amplifiers)

10-605-162 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS ...review the characteristics of the passive RL, RC, RLC active filters, introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-163 MICROPROCESSORS 1: INTRODUCTION ...review of number, use of simulation software, fetch and execute, and fundamentals of assembly language programming.

10-605-164 MICROPROCESSORS 2: TECHNIQUE ...complex addressing modes, fields in programming, pseudo-ops, programming technique, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-165 MICROPROCESSORS 3: INTERFACES ...basic assembly language programming for operating a SCI, ADC, Timer and SPI, and continued use of simulation software. (Prerequisite: 10-605-164, Micro 2: Technique)

10-605-166 MICROPROCESSORS 4: ADVANCED INTERFACING ...writing rituals for switches, LEDs, LCDs, ADCs, keypads, stepper motors, DC motors, and infrared LEDs and the continued use of simulation software. (Prerequisite: 10-605-165, Micro 3: Interfaces)

10-605-167 MICROPROCESSORS 5: INTERMEDIATE ...designing and writing intermediate level programs in assembly language. The study will include the use of simulation software. (Prerequisite: 10-605-166, Micro 4: Advanced Interfacing)

10-605-168 MICROPROCESSORS 6: ADVANCED ...designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

10-605-170 DATACOMM 1: INTRODUCTION ...introduction to pulse amplitude modulation, pulse amplitude modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-660-103, Digital 3: Registers)

10-605-171 DATACOMM 2: PULSE CODE MODULATION ...introduction to pulse code modulation, pulse code modulation principles, sampling and signal reconstruction, analog to digital conversion, and digital to analog conversion. (Prerequisite: 10-605-170, Data Comm 1: Introduction)

10-605-172 DATACOMM 3: DELTA MODULATION ...introduction to delta modulation, delta modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-605-171, Data Comm 2: Pulse Code)

10-605-173 DATACOMM 4: DIGITAL MODULATION ...introduction to digital modulation, line coding and synchronization, principles of frequency shift keying, and principles of amplitude shift and phase shift keying. (Prerequisite: 10-605-172, Datacomm 3: Delta Modulation)

10-605-174 DATACOMM 5: FIBER OPTICS-INTRODUCTION ...introduction to fiber optic signal processing, transmission, and reception. (Corequisite: 10-605-172, Data Comm 3: Delta Modulation)

10-605-175 DATACOMM 6: FIBER OPTICS-ADVANCED ...advanced demonstration of skills required to analyze and troubleshoot fiber optic signal processing, transmission, and reception.

10-605-180 ANALOG COMMUNICATIONS 1: NOISE EFFECTS ...characteristics of noise in communications systems and analyze amplitude modulation. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-605-181 ANALOG COMMUNICATIONS 2: AM/SSB ...characteristics of single sideboard transmission and receiving systems. (Prerequisite: 10-605-180, Analog Comm 1: Noise Effects)

10-605-182 ANALOG COMMUNICATIONS 3: FM SYSTEMS ...characteristics of frequency modulation transmission and receiving systems. (Prerequisite: 10-605-181, Analog Comm 2: AM/SSB)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-100 ELECTRONIC FABRICATION - INTRO TO ...the study will include an introduction to electronics fabrication techniques, including basic soldering and assembly, and an overview of connectors and printed circuit board construction.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Corequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-660-112 ELECTRONICS 3: OP-AMPS-BASIC ...introduction to the circuit characteristics of integrated operational amplifiers. The various connections, inverting, non-inverting and comparator will be studied as well as specialized applications such as summers and filters. (Corequisite: 10-660-111, Electronics 2: Transistor-Basic)

10-660-113 DIGITAL 4: ALU ...unsigned and signed arithmetic using binary numbers, the construction of adder circuits and subtraction circuits, and the analysis of a computer ALU is studied. (Prerequisite: 10-660-103, Digital 3: Registers)

10-660-114 DIGITAL 5: CHARACTERISTICS ...propagation delay, rise time, fall time, setup and hold time, asynchronous timing considerations, Schmitt trigger devices, one-shots and astable multivibrators, and synchronous counter design are studied. (Corequisite: 10-660-113, Digital 4: ALU)

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Emergency Medical Technician-Basic

Program Code 305313

This program is *not* eligible for financial aid.

Technical Diploma

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Emergency Medical Technician-Basic students perform emergency patient care and basic life support skills in compliance with the Wisconsin scope of practice including the transport of injured and ill patients to hospital emergency departments.

Program Outcomes

- Apply preparatory aspects of emergency care.
- Perform airway management.
- Perform patient assessment.
- Manage medical, behavioral, and trauma patients.
- Adapt principles to pediatric cases.
- Perform field operations.

Requirements for Program Entry

- First priority for admission is given to applicants sponsored by a Wisconsin licensed ambulance service. Unsponsored applicants are admitted only after all sponsored students are admitted.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmark is Reading Comprehension: 55. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Proof of current health status and immunizations.
- NWTC is required to comply with the Wisconsin Caregiver Law.

Employment Potential

A graduate with an EMT-Basic Technical Diploma will have the potential for employment as an Emergency Medical Technician. Ambulance services in Wisconsin are volunteer, private, fire based or hospital based.

Emergency Medical Technician: performs emergency patient care and basic life support in the field, transporting sick and injured patients to hospital emergency departments.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Note

- Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed only after successful completion of the licensing examination and application for a state license.
- Completion of 30-531-302, Medical First Responder prior to program entry is highly recommended.

Curriculum

The EMT-Basic Technical Diploma is a one-semester program. Upon graduation, a student will have completed five credits. This course is 144 hours.

FIRST SEMESTER

Catalog No.	Description	Credits
10-531-102	EMT Basic	5
	SEMESTER TOTAL	5
	TOTAL CREDITS	5

CURRICULUM NOTE

No final grade lower than a "C" is acceptable. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

COURSE DESCRIPTION

This course provides an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-531-102 EMERGENCY MEDICAL TECHNICIAN BASIC ... preparatory aspects, airway management, patient assessment, medical/behavioral cases, trauma care, pediatric cases, and field operations in basic life-support emergency medical care. (Prerequisite: Accepted into the Emergency Medical Technician-Basic program.)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Emergency Medical Technician-Intermediate Technician

Program Code 305316

This program is *not* eligible for financial aid.

Technical Diploma

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

EMT Intermediate Technician students are Wisconsin licensed EMT-Basics seeking to upgrade their skills to the EMT Intermediate Technician level. An EMT Intermediate Technician performs pre-hospital patient care for the ill and injured on board a licensed EMT Intermediate Technician ambulance service. These skills are performed and compliant with the Wisconsin scope of practice.

Program Outcomes

- Apply the preparatory aspects of EMT Intermediate Technician care.
- Perform intravenous therapy.
- Perform clinical skill competencies.
- Demonstrate usage of basic pharmacological principles.
- Manage cardiac, diabetic and narcotic overdose cases using medications.

Requirements for Program Entry

- Must be 18 years or older to enter training.
- Valid Wisconsin EMT-Basic license.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmark is Reading Comprehension: 55. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Physician medical director endorsement of EMT skill competency.
- Proof of current health status and immunizations.
- NWTC is required to comply with the Wisconsin Caregiver Law.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Employment Potential

A graduate with an EMT Intermediate Technical Diploma will have the potential for employment as an EMT Intermediate Technician with a Wisconsin ambulance service licensed to provide EMT Intermediate Technician level care. Ambulance services in Wisconsin are volunteer, private, fire based or hospital based.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Note

Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed only after successful completion of the licensing examination and application for a state license.

Curriculum

The EMT Intermediate Technician Technical Diploma is a one-semester program. Upon graduation, a student will have completed two credits. This course is 92 hours.

FIRST SEMESTER

Catalog No.	Description	Credits
30-531-340	EMT-Intermediate Technician	2
	SEMESTER TOTAL	2
	TOTAL CREDITS	2

CURRICULUM NOTE

No final grade lower than a "C" is acceptable. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

COURSE DESCRIPTION

This course provides an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-531-340 EMT-INTERMEDIATE TECHNICIAN ...preparatory aspects, clinical decision-making, basic pharmacology, intravenous therapy, cardiovascular cases, diabetic, narcotic overdose, pediatrics, terrorism response and clinical skill competencies of EMT Intermediate Technician level care. (Prerequisite: Accepted into the EMT Intermediate Technician program)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Energy Management Technology

Program Code 104813
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Energy Management Technology prepares students with the skills and knowledge needed to enter and advance in the field of energy management. Emphasis will be placed on application of basic principles of physics, electro-mechanical technology and analysis of the description and measurement of energy in today's building systems.

Program Outcomes

- Evaluate the energy use patterns for commercial building and recommend energy efficiency and alternative energy solutions for high-energy consuming buildings.
- Troubleshoot, upgrade and maintain the Energy Management Systems (EMS); perform data recovery and backup duties.
- Monitor the efficiency of energy management operations, detecting, where possible, equipment failures.
- Construct energy evaluation technical reports and make presentations for potential project implementation.
- Upload and download information from remote and local networks to aid in the efficiency of energy management.
- Enhances energy management software and prepare program documentation and flow charts.
- Read and comprehend mechanical blueprints and control drawings.
- Respond to calls for heating, ventilating, air conditioning, and exterior lighting service independently; and determine whether to dispatch appropriate staff or to resolve problems remotely via the energy management system.
- Assist in the writing of specifications for additional energy management systems.
- Write technical proposals for energy projects.
- Provide training to campus users and facilities operations staff.

Employment Potential

A graduate of the program will have the potential for employment for such diverse employers as engineering firms, public and private utilities, energy equipment companies, HVACR contractors and departments of energy in the following areas:

Energy Auditor: conducts facility energy audits/assessments and completes data collection to identify energy efficiency improvement opportunities and complete recommendations for energy conservation measures.

Energy Management Consultant: conducts facility energy audit/assessments and is responsible for making recommendations regarding energy efficiency improvement opportunities. Prepares cost estimates, energy analysis and is accountable for building long term customer relationships.

Energy Program Coordinator: evaluates the energy use patterns for buildings and recommends energy efficiency and alternative energy solutions. Develops and implements a comprehensive energy program. Works with administrative and facilities management to implement programs.

Control System Specialist: analyzes heating, cooling and ventilating systems to determine optimum operating conditions and procedures. Assists in the design and development of new or modified HVAC systems to achieve more uniformity.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Facility Manager
- Certified Energy Manager
- Building Manager
- Energy Engineer
- Environmental Consultant

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses required for mastery of algebra skills. For a description of algebra skills, see the Basic Education Section of this catalog.
- The student will either provide proof of having completed course work in Windows, Word and Excel or pass a proficiency test.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89 and College Level Math: 50. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Curriculum

The Energy Management Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-480-101	Energy-Intro Renew & Sustain	4
10-481-114	Intro to Energy Management	3
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Circuit Theorems	1
10-804-118	Interm Algebra w Apps	4
10-806-143	College Physics 1	3
	SEMESTER TOTAL	17

SECOND SEMESTER

10-103-131	Micro: Excel-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-102	Automation 3: PLC	1
10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
	SEMESTER TOTAL	17

THIRD SEMESTER

10-481-106	Intro to Water Resources	2
10-481-109	Commercial HVACR Analysis	3
10-481-111	Energy Control Strategies	3
10-481-115	Lighting Applications	3
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-481-107	Building Energy Simulators	3
10-481-108	Commercial Energy Analysis	3
10-481-110	Energy Accounting	2
10-481-113	Energy Investment Analysis	3
10-801-197	Technical Reporting	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-131 MICRO: EXCEL-INTRODUCTION
...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-480-101 ENERGY-INTRO RENEW & SUSTAIN ...an overview of various renewable energy technologies and sustainable design practices and their current applications. Emphasis will be placed on energy consumption, efficiency, and conservation.

10-481-106 INTRO TO WATER RESOURCES
...water use; basic hydrology, water stressors at multiple scales; stormwater, wastewater and drinking water; water quality appropriate to use; water supply and demand management as well as emerging issues. (Prerequisites: 10-481-112, Energy Efficient Methods; 10-481-114, Intro to Energy Management)

10-481-107 BUILDING ENERGY SIMULATORS
...course covers the variety of computer programs available for analyzing commercial buildings including BIM methodology, hourly simulations and an overview of current programs on the market such as eQuest. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies; 10-481-115, Lighting Applications)

10-481-108 COMMERCIAL ENERGY ANALYSIS
...emphasis is on the analysis of energy use in commercial buildings including utility bill analysis, audit data, identifying energy efficiency measures, energy savings and investment calculations, audit report writing. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Applications)

10-481-109 COMMERCIAL HVACR ANALYSIS
...identify commercial HVAC system types and the general energy use impact of each type. Calculations of system equipment efficiencies will be used to determine EER, SEER, AFUE, COP, combination and seasonal efficiency in boilers, balance point partial efficiency, BIN analysis. (Prerequisites: 10-481-112, Energy Efficient Methods; 10-481-114, Intro to Energy Management)

10-481-110 ENERGY ACCOUNTING ...review of energy units, data gathering for energy accounting utility rates and schedules, energy data organization, adjusted baselines, cost avoidance, load factor, data anaylsis, data presentation, use of Utility Manager software. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Applications)

10-481-111 ENERGY CONTROL STRATEGIES
...topics include building system control theory and devices; including electric, pneumatic and digital controls, emphasis is placed on identifying and understanding control strategies related to energy using systems and methods to estimate energy savings. (Prerequisites: 10-481-112, Energy Efficient Methods; 10-481-114, Intro to Energy Management)

10-481-113 ENERGY INVESTMENT ANALYSIS
...emphasis on simple payback and life-cycle cost analysis, time value of money, cash flow equivalence, cost-benefit analysis, tax credits, depreciation, inflation and/or escalating fuel costs on energy investments and cost estimating. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Applications)

10-481-114 INTRO TO ENERGY MANAGEMENT
...defines the need for energy management as an integral part of society at all levels. The course will present the various opportunities available to energy management students through lectures, video and guest speakers.

10-481-115 LIGHTING APPLICATIONS ...assessment of quantity and quality of light, light sources, luminaries, lighting controls, manufacturer lamp and ballast specifications, lighting power density, lighting-HVAC interactions, retrofit opportunities, cost savings analysis and light codes/regulations. Students will critically evaluate lighting systems, luminaries and associated components. Understand and perform various types of luminance calculations, including point-by-point, lumen method and computerized procedures. (Prerequisites: 10-481-112, Energy Efficient Methods; 10-481-114, Intro to Energy Management)

10-620-100 FLUIDS 1: BASIC PNEUMATICS
...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS
...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-161 POWER ELECTRICITY 1: MOTORS
...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS
...series DC, compound DC, AC induction, and specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC
...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-102 AUTOMATION 3: PLC
...basic programmable logic controller programming and troubleshooting.

10-664-160 CONTROL 1: DISCRETE SYSTEMS
...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS
...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

Enology *(pending WTCS approval June 2011)*
Program Code 103202
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus as well as the partner colleges listed below. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Enology Associate Degree will train both current and future employees of wineries in the grape and wine industry. Students will gain Enology skills such as fermentation, clarification, and aging of juice and wine; lab methodologies; sanitization; quality control; winery equipment operation, grape maturity testing; wine and must analysis. NWTC will partner its resources with the Viticulture and Enology Science and Technology Alliance (VESTA). The Enology technical courses (designated with VIN) will be taught in conjunction with the VESTA Alliance through a combination of online learning and field experiences. The Enology program will provide students with an internship at a local winery, offering an intense level of practical and realistic winery experiences sufficient to equip them with the skills and work experience required for a position in the wine industry.

Program Outcomes
- Examine grape samples to ascertain sweetness and acidity of crop, and determine harvest time based off of this information.
- Select yeasts for fermentation and barrels for aging.
- Communicate with vineyard manager regarding crop load, harvest time, and other issues related to crop quality.
- Correct sugar and acid levels of must and wine if necessary.
- Oversee primary fermentation by punching down the grape skin cap, regulating fermentation temperature and the amount of time the skins are in contact with the must, and initiating malolactic fermentation.
- Supervise workers in crushing and pressing processes, or perform those duties themselves.
- Supervise cellar operations during secondary fermentation with tasks such as aging, topping off barrels, and clearing wine of fermentation residue.
- Direct and coordinate blending and bottling of wine, or perform those duties themselves.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the basic skills necessary to own and operate or be employed at a winery as a:

- Winemaker
- Winemaking Assistant
- Cellar Worker
- Tasting Room Host

With additional education and/or work experience, graduates may find other opportunities for employment.
- Scientific Industry, Laboratory
- Food Science Industry-Food Safety

Note
- NWTC has partnered with Michigan State University, Missouri State University, Missouri State University-West Plains, Northeast Iowa Community College, Redlands Community College, Rend Lake College, South Plains College, Arkansas Tech University-Ozark Campus, Kent State University-Ashtabula, Highland Community College, Central Lakes College and Ivy Tech Community College to offer an Associate Degree in Enology. The partnership is formally referred to as the Viticulture and Enology Science and Technology Alliance, or VESTA. The partnered colleges individually deliver VESTA classes through various online delivery formats.
- Students desiring to earn an Associate Degree in Viticulture must apply for admission to NWTC and must take a minimum of 25% of technical core courses at NWTC.
- The VESTA online courses, identifiable by "VIN" in front of the course code have a separate admission and registration process.
- All VESTA courses require a practicum. Practicum sites throughout the state are listed on the VESTA website. Students may propose a new practicum site if they find a willing and eligible vineyard.
- Some courses have a minimum age requirement.
- Further information on VESTA can be found on the website www.vesta-usa.org.

For complete program information,
go to: www.nwtc.edu

Curriculum

The Enology Associate Degree program is a two-year, four-semester program. Upon graduation, a student will have earned 63 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
VIN 146	Introduction to Enology	3
* 10-145-170	Micro-Business: Feasibility	3
10-801-198	Speech	3
10-804-118	Interm Algebra w Apps	4
10-806-134	General Chemistry	4
	SEMESTER TOTAL	17

SECOND SEMESTER

VIN 148	Winery Sanitation	3
VIN 160	Winery Equipment Operation	2
VIN 210	Intro to Wine Microorganisms	3
VIN 246	Intermediate Enology	3
VIN 290	Winery Safety	2
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

THIRD SEMESTER

VIN 257	Fall Wine Prod Internship	3
VIN 268	Wine and Must Analysis	3
* 10-065-141	Microbiology-Wine	4
* 10-145-171	Micro-Business: Business Plan	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

VIN 259	Cellar Operations Technology	2
VIN 266	Sensory Evaluation	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	Elective	3
	SEMESTER TOTAL	14
	TOTAL CREDITS	63

CURRICULUM NOTE

* These courses must be taken at NWTC to receive an Associate Degree.

SUGGESTED ELECTIVES

- VIN 270, Marketing for the Small Winery
- VIN 272, Winery Tasting Room Management
- VIN 274, Wines of the World
- VIN 290, Winery Safety
- 10-090-105, Organic Hort/Fruits, Vegs, Herbs
- 47-311-400, Beverage Server-Responsible

(This course will not meet the requirements of the degree, but may be of interest to some students.)

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-054-141 MICROBIOLOGY-WINE ...basic principles of wine microbiology. Students will become familiar with the identification, physiology, morphology, and biochemistry of wine organisms to understand their influence on winemaking and the importance of quality assurance controls in the laboratory as well as regulatory requirements of the wine industry. (Prerequisite: 10-806-134, General Chemistry)

10-145-170 MICRO-BUSINESS: FEASIBILITY ...learn about entrepreneurship; the lifestyle and demands; skill sets required; hear entrepreneurs' stories of success and failure; tour start-ups in the community and determine the feasibility of your business concept.

10-145-171 MICRO-BUSINESS: BUSINESS PLAN ...focused on marketing and finance; learn tactics for market penetration, advertising; PR; learn from guest speakers from various media;discover sources of capital; learn financial recordkeeping; write your business plan.

VIN 146 INTRODUCTION TO ENOLOGY ...learn the basic science and technology of winemaking. Make wine from a kit, track fermentation, make various chemical measurements and provide one bottle of finished wine for evaluation. (Students must be 21 years of age to enroll in this course.)

VIN 148 WINERY SANITATION ...covers methods used for sanitizing the premises, tanks, pumps, filters, oak barrels, and sampling equipment, including chemical agents, reagents, and thermal treatments leading to sterile bottling. Environmental issues and compliance also addressed.

VIN 160 WINERY EQUIPMENT OPERATION ...overview of winemaking including operations and equipment, barrel aging and management, membrane separation processes, workplace safety, and specialized contacting, cleaning, sanitation, process control, refrigeration, air conditioning, humidity, electrical, wastewater, solid waste handling systems.

VIN 210 INTRO TO WINE MICROORGANISMS ...learn about the variety of microorganisms frequently encountered in the wine making process both beneficial and harmful including identification, physiology, morphology, and biochemistry of various wine microorganisms.

VIN 246 INTERMEDIATE ENOLOGY ...the science and technology of winemaking intended for experienced intermediate winemaker or winery employee interested in career development, or advanced home winemaker seeking new challenges. Basic organic chemistry, microbiology, and some mathematics familiarity are recommended.

VIN 257 FALL WINE PRODUCTION INTERNSHIP ...hands-on instruction for the individual anticipating a career in the wine industry who has completed major course sequences. Experience an intense level of practical and realistic winery operation during crush season.

VIN 259 CELLAR OPERATIONS TECHNOLOGY ...get onsite experience learning techniques associated with finished wine production. Learn wine transfer, wine fining, cold stabilization, wine clarification, blending of wines, and bottling.

VIN 268 WINE AND MUST ANALYSIS ...analysis regarding grape juice and wine are chosen for laboratory exercises and demonstrate various chemical, physical, and biochemical methods. Students will participate in workshops and hands-on experiences at participating wineries.

VIN 266 SENSORY EVALUATION ...develop an understanding of the principles of sensory evaluation used in commercial wine making. Students will utilize sensory kits and workshops to further sensory evaluation skills and techniques. (Students must be 21 years of age to enroll in this course.)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Farm Business and Production Management
Program Code 300901

This program is *not* eligible for financial aid.

Technical Diploma

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description
Farm Business and Production Management covers basic farming production and business management principles needed to be an efficient farmer. Formal classes are delivered district-wide at locations convenient for the farmers.

Program Outcomes
- Calculate farm business cost of production for forage, grain, beef, pork, and milk.
- Prepare and assess a livestock management plan that is environmentally friendly.
- Prepare and assess a business financial plan.
- Develop and assess a soil and crop management plan that is environmentally friendly.
- Own, operate, and/or be employed in an agriculture-related industry.
- Implement a business, soil, crop, and livestock management plan that is environmentally friendly.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Communications: ability to listen, write complete sentences, spell accurately, and express ideas well verbally.
- Science: basic plant and animal biology, chemistry, and applied physics.
- Computer skills: keyboarding at 30 words per minute.
- Basic math defined as addition, subtraction, multiplication and division. Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have basic skills necessary to own and operate or be employed on a farm.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Dairy Herdsperson
- General Farm Manager
- Farm Records Manager
- Crop Supervisor
- Livestock Feeding Specialist
- Farm Equipment and Facilities Maintenance Manager
- Farm Service Employee
- Field Equipment Operator

Note
Tuition assistance is available through the Wisconsin Dept. of Agriculture and the Wisconsin Technical College Categorical Funding Tuition Assistance Grant; other local scholarships are available.

Curriculum
The Farm Business and Production Management Technical Diploma is a six-year, part-time program. Upon graduation, a student will have completed 24 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
30-090-387	Farm Record/Business Analysis	4
30-090-388	Crop Management	4
30-090-391	Livestock Management	4
30-090-392	Livestock Nutrition	4
30-090-393	Soil Management	4
30-090-394	Farm Business Operation	4
	SEMESTER TOTAL	24
	TOTAL CREDITS	24

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-090-387 FARM RECORD/BUSINESS ANALYSIS ...farm business mission, objectives, goals, use of farm credit, farm business arrangements, orderly farm transfer, farm estate planning, farm income tax preparation, computer records and farm business analysis.

30-090-388 CROP MANAGEMENT ...economics, alternative crop strategies, production management, variety selection, maintenance fertilization, pest controls and weed chemicals, harvesting, storage, marketing and farm business analysis, specialty crops, government programs and developing crop budgets.

30-090-391 LIVESTOCK MANAGEMENT ...livestock selection, breeding management, herd health, young stock management, selection, operation and maintenance of milking, feeding, ventilation and manure handling systems, farm buildings, feed storage and farm business analysis.

30-090-392 LIVESTOCK NUTRITION ...nutritional terminology feeding management, economics of feeds, nutritional terminology requirements for maintenance, estimating feed consumption, feed tag labels for protein, energy, minerals and vitamins, evaluate feeding programs and metabolic diseases.

30-090-393 SOIL MANAGEMENT ...preparing and implementing a land use plan, soil testing procedures and reports, corrective fertilizers, soil conservation, tillage operations, nutrient management plan and implementations farm business business analysis.

30-090-394 FARM BUSINESS OPERATION ...farm organization, budgeting, cash flow, financial statements, record keeping systems, tax issues, business structure for farm operation, credit needs, farm business analysis, farm safety, employee management, marketing plan.

Financial Institutions Management

Program Code 101144
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Financial Institutions Management is designed for current or prospective employees of financial institutions seeking specialized training.

Program Outcomes

- Analyze business and consumer financial documents.
- Ensure compliance with state and federal laws.
- Recommend appropriate financial products to customers.
- Use personal financial planning techniques.
- Assess how economic policies and changes in the level of business activity affect the financial industry.
- Make loan decisions.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Manage the work of other people in a team environment.
- Perform basic business math calculations.
- Deliver effective customer service.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math.
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 68; Arithmetic: 34; Sentence Skills: 60. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

The curriculum is structured to provide a climate for the development of the functional skills needed by participants from entry-level through senior management.

A graduate of this program will have the potential for employment in the following areas:

Customer Service Representative (CSR): a primary contact person for customer services, identifies additional and appropriate financial services, guiding customers to the proper departments for specific products, and holds an influential position within a team environment.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Commercial Banker
- Bank Officer

Note

- Learners interested in double majoring in Accounting or Credit Business Management should consult with an instructor.
- Refer to the program website for information on accelerated learning and for helpful tips that will assist you in achieving the highest quality and most rewarding academic experience.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
908094, Leadership in Human Relations

Curriculum

The Financial Institutions Management Associate Degree is an accelerated program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-114-111	Credit-Consumer	4
10-114-151	Finance-Banking Principles	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16

SECOND SEMESTER

Catalog No.	Description	Credits
10-102-150	Business Law & Ethics	3
10-114-125	Finance-Mortgage Lend/Serv	3
10-114-153	Finance-Personal	3
10-114-167	Finance-Commercial Lending	3
10-809-195	Economics	3
	SEMESTER TOTAL	15

THIRD SEMESTER

Catalog No.	Description	Credits
10-101-110	Accounting 1	4
10-114-121	Credit-Management Practices	3
10-114-166	Credit-Collection Methods	3
10-114-180	Finance-Money/Banking	3
10-804-123	Math w Business Apps	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	19

FOURTH SEMESTER

Catalog No.	Description	Credits
10-114-101	Credit-Business Applications	3
10-114-155	Finance-Trust Functions/Serv	3
10-114-170	Credit-Law	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3
	Elective	2
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

CURRICULUM NOTE

The courses beginning with course numbers 10-114-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students are expected to do most assignments outside of class time.

SUGGESTED ELECTIVES

Any course in the Credit Business Management or Accounting program.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-110 ACCOUNTING 1
...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-102-150 BUSINESS LAW & ETHICS
...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/ footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-114-101 CREDIT-BUSINESS APPLICATIONS ...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, breakeven, depreciation, gain/ loss, and inventory. (Pre-requisite: 10-101-110, Accounting 1)

10-114-111 CREDIT-CONSUMER
...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-114-121 CREDIT-MANAGEMENT PRACTICES ...manager's responsibilities/ environment, planning, problem solving, organizational structure/cultures, staffing/ human resources, leadership/teamwork, motivational techniques, communications, management controls, ineffective performers, and ethical business practices. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business)

10-114-125 FINANCE-MORTGAGE LENDING/SERVICING ...principles and practices involved in making and closing mortgage loans and servicing a sound mortgage portfolio, including the secondary mortgage market. (Prerequisite: 10-114-111, Credit-Consumer)

10-114-151 FINANCE-BANKING PRINCIPLES ...U.S. banking history, organization, the Federal Reserve System, deposit functions, security issues, payment flow, credit functions, accounting, specialized services, marketing, and current issues and trends.

10-114-153 FINANCE-PERSONAL ...income and occupations, financial spending plan development, purchasing consumer goods and services, risk management plan development, investment plan development, retirement and estate planning, and financial advising.

10-114-155 FINANCE-TRUST FUNCTIONS/SERVICE ...trust functions; estate settlement; guardianships; trust services; performance of agencies, individuals, business organizations, charitable institutions; and trust administration.

10-114-166 CREDIT-COLLECTION METHODS ...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business or 10-114-109, Credit-Policies/Procedures)

10-114-167 FINANCE-COMMERCIAL LENDING ...functions of the loan interview and credit investigation, elements of the loan document and its loan functions, the structuring of commercial loans, and federal and state laws governing commercial lending. (Prerequisite: 10-114-111, Credit-Consumer)

10-114-170 CREDIT-LAW ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-117, Credit-Business or 10-114-109, Credit-Policies/ Procedures)

10-114-180 FINANCE-MONEY/BANKING ...economics and banking, commercial banking system, money supply, investments and loans, Federal Reserve System, and international monetary system. (Prerequisite: 10-809-195, Economics)

Fire Protection Engineering Technology

Program Code 105033
Associate Degree

Offered at the Marinette campus. For information: (715) 735-9361. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Fire Protection Engineering Technology teaches students to design, install, and service automatic sprinkler, fire alarm, and special hazard fire suppression systems.

Program Outcomes

- Analyze developments in the fire protection field.
- Produce fire protection drawings.
- Use written, technical, and oral presentations.
- Design fire protection systems.
- Use construction blueprints.
- Evaluate automatic sprinkler systems.
- Evaluate fire protection hazards.
- Troubleshoot electrical components of fire protection systems.
- Compare manual and automatic fire extinguishing systems and agents.
- Arrange fire detection, alarm, and control devices.
- Design automatic fire sprinkler systems.
- Test to NICET Level II in at least one subfield.
- Design special hazards systems.
- Observe how fire protection is viewed by the general public.
- Assemble systems cost information.
- Install, service, and inspect fire protections systems.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- High school background in mathematics, science, and technology education.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores please contact the Assessment Center (920) 498-5427 or (800) 422-NWTC, ext. 5427.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Fire Protection Systems Designer: prepares designs and layout drawings of new detection and suppression systems for commercial, residential, and industrial applications.

Fire Protection Equipment Sales Representative: merchandises fixed and portable fire protection equipment for commercial, industrial, and residential applications.

Fire Protection Systems Installer: interprets the protection system design for on-site installation, operation, and maintenance of fire protection systems.

Industrial Safety Technician: assists the industrial safety manager in plant fire safety programs and procedures; and ensures compliance with federal, state, and municipal codes and ordinances.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Fire Protection Consultant
- Fire Protection Equipment Sales Manager
- Industrial Safety Manager
- Municipal Safety Manager
- Property Loss/Risk Management Specialist

CURRICULUM NOTE

* Any three of the six NICET courses must be taken prior to graduation.

10-503-185 NICET Advanced Sprinklers 1, 1 credit - offered third semester
10-503-187 NICET Advanced Special Haz 1, 1 credit - offered third semester
10-503-186 NICET Advanced Sprinklers 2, 1 credit - offered fourth semester
10-503-188 NICET Advanced Special Haz 2, 1 credit - offered fourth semester
10-503-189 NICET Advanced Alarms 1, 1 credit - offered fourth semester
10-503-190 NICET Advanced Alarms 2, 1 credit - offered fourth semester

Curriculum

The Fire Protection Engineering Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-503-114	Fire Protection Fundamentals	3
10-503-115	Fire Tech Prt Rdg/Sketching	3
10-503-136	Sprinkler Systems 1	2
10-606-115	CAD	3
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
	SEMESTER TOTAL	17

SECOND SEMESTER

10-503-120	Special Hazards Systems 1	3
10-503-126	Sprinkler Hydraulics-Auto	3
10-503-132	Fire Detection-Elec 1	3
10-503-137	Sprinkler Systems 2	4
10-503-180	Nicet-Basic	2
10-606-128	CAD-Fire Tech Advanced	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	19

THIRD SEMESTER

10-503-128	Fire Alarm System Design	2
10-503-129	Fire Alarm Systems Application	1
10-503-135	Fire Detection-Elec 2	3
10-503-138	Hazard Analysis	3
10-503-149	Sprinkler Systems 3	2
* 10-503-1XX	NICET Advanced	1
	AND/OR	
* 10-503-1XX	NICET Advanced	1
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-503-140	Special Hazards Systems 2	3
10-503-148	Technical Project	3
* 10-503-1XX	NICET Advanced	1
	OR	
* 10-503-1XX	NICET Advanced	1
	OR	
* 10-503-1XX	NICET Advanced	1
	OR	
* 10-503-1XX	NICET Advanced	1
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	68

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-503-114 FIRE PROTECTION FUNDAMENTALS ...combustion processes, fire detection technology, fire suppression technology, fire protection mathematics, historical fires, fire codes, building codes, contracts, bidding, liability, the domestic and international fire protection industry, and career opportunities.

10-503-115 FIRE PROTECTION BLUEPRINT READING/SKETCHING ...reading floor plans, details, site plans, electrical, HVAC, plumbing and fire protection plans, performing and sketching site surveys for fire protection, preparing bill of materials, and interpreting specifications.

10-503-120 FIRE HAZARDS SYSTEMS 1-SPECIAL ...carbon dioxide systems, the phase out of Halon systems, clean agents, halocarbon systems, inert gas systems, dry chemical systems, wet chemical systems, foam systems, and explosion suppression systems.

10-503-126 SPRINKLER HYDRAULICS-AUTOMATIC ...hydraulic calculations for tree, loop, and grid systems using manual and computerized methods; and testing and evaluating water supplies for fire protection.

10-503-128 FIRE ALARM SYSTEM DESIGN ...the operating principles, selection and application of automatic fire detectors; proper location and spacing of detectors; the selection and use of notification appliances; and various types of fire alarm systems.

10-503-129 FIRE ALARM SYSTEMS APPLICATIONS ...the interconnection of automatic fire detectors, notification appliances and fire alarm panels; addressability of devices; programming of addressable fire alarm panels; and troubleshooting of addresable panels.

10-503-132 FIRE DETECTION-ELECTRONICS 1 ...basic concepts of AC/DC electrical circuits, Ohm's Law, series/parallel resistance, conductors, insulators, batteries, and electro-mechanical induction used in fire protection.

10-503-135 FIRE DETECTION-ELECTRONICS 2 ...electronic sensing and activating systems, detection, alarm and suppression systems, component parts, power sources, and testing and troubleshooting fire protection systems. (Prerequisite: 10-503-132, Fire Detection- Elec 1)

10-503-136 SPRINKLER SYSTEMS 1 ...automatic fire sprinkler systems emphasizing types of sprinkler systems and their application, hazard classifications, automatic fire sprinkler system components, and sprinkler system design approaches.

10-503-137 SPRINKLER SYSTEMS 2 ...fire protection requirements of automatic sprinkler systems, design pipe schedule and hydraulically calculated water suppression systems, foam systems, and fire pump selection. (Prerequisite: 10-503-136, Sprinkler Systems 1)

10-503-138 HAZARD ANALYSIS ...planning, surveying, and making professional recommendations regarding appropriate fire prevention, and suppression and detection systems for specified industrial fire hazards.

10-503-140 SPECIAL HAZARDS SYSTEMS 2 ...the design of special hazard systems emphasizing total flooding and local application CO_2 systems, inert gas and halocarbon clean agent systems. (Prerequisite: 10-503-120, Special Hazards Systems 1)

10-503-148 TECHNICAL PROJECT ...independent research report or project utilizing technical and communication skills from Fire Protection Engineering Technician program.

10-503-149 SPRINKLER SYSTEMS 3 ...high piled storage, rack storage, extended coverage, residential, and water spray sprinkler system design utilizing computer design software; specifying supplemental water supplies for fire protection.

10-503-180 NICET-BASIC ...procedures, forms, standards, codes, and general knowledge necessary to successfully pass the crossover work elements in level 2 - NICET Certification in "Auto Sprinkler, Special Hazard, and Fire Alarm Systems Layouts."

10-503-185 NICET ADVANCED SPRINKLERS 1 ...certification preparation for Level I and Level II NICET work elements in the subfield of Automatic Sprinkler System Layout.

10-503-186 NICET Advanced Sprinklers 2 ...certification preparation for Level III and Level IV NICET work elements in the subfield of Automatic Sprinkler System Layout. (Prerequisite: 10-503-185, NICET Advanced Sprinklers 1)

10-503-187 NICET ADVANCED SPECIAL HAZARDS 1 ...certification prepared for Level I and Level II NICET work elements in the subfield of Special Hazards Systems.

10-503-188 NICET ADVANCED SPECIAL HAZARDS 2 ...certification preparation for Level III and Level IV NICET work elements in the subfield of Special Hazards Systems. (Prerequisite: 10-503-187, NICET Advanced Spec Haz 1)

10-503-189 NICET ADVANCED ALARMS 1 ...certification preparation for Level I and Level II NICET work elements in the subfield of Fire Alarms.

10-503-190 NICET ADVANCED ALARMS 2 ...certification preparation for Level III and Level IV NICET work elements in the subfield of Fire Alarms. (Prerequisite: 10-503-189 NICET Advanced Alarms 1)

10-606-115 CAD (COMPUTER AIDED DRAFTING) ...entry level computer-aided graphics with AutoCAD software; using basic and advanced drawing, display, editing, dimensioning, and plotting commands.

10-606-128 CAD-FIRE TECH ADVANCED ...advanced definition and use of: blocks, user coordinate systems, external references, attributes, and layouts for drawing and plotting; and drawing exchange procedures. (Prerequisite: 10-606-115, CAD)

Fire Protection Technician

Program Code 105032
Associate Degree

A Fox Valley Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Fox Valley Technical College.

Program Description

This program prepares you for a career in fire prevention and protection. You will learn to apply proper principles in solving fire-related problems facing America in the 21st century. Through realistic classroom simulation and hands-on experience, you will master the knowledge and techniques to save lives and property.

The Fire Protection Internship provides an opportunity for you as a qualified student to work in a fire department for a semester or school year and function as a regular firefighter. You are also given practical training at the Fox Valley Technical College Regional Fire Training Center. This practical work experience and training together with classroom instruction provides you with a comprehensive understanding of fire prevention and firefighting principles.

You will have the opportunity to complete certification training for the State of Wisconsin in Firefighter I and II, Fire Inspector I, and Driver/Operator-Pumper. You will receive training in hazardous materials, rope rescue, confined space rescue, and trench rescue to the Technician level. You will also receive EMT-Basic certification training while completing your associate degree.

The Fire Protection Technician program is designed to permit a new student to enter at the start of each semester as openings exist.

Program Outcomes

- Demonstrate professional conduct by displaying personal code of ethics, positive work ethics, flexibility, teamwork skills, physical fitness, safe procedures, and sensitivity to diverse cultures and individuals.
- Perform fire prevention activities including preplanning, public education, inspections, and investigations.
- Apply management skills to emergency incidents.
- Meet professional fire and emergency medical credentialing standards.
- Apply critical thinking skills to both emergency and non-emergency situations.
- Communicate clearly and effectively both verbally and through written documentation with clients, coworkers, other agencies, and supervisors.

Requirements for Program Entry

- Accuplacer Reading score of 62 or greater or completion of equivalent GOAL course.
- Accuplacer Grammar score at 83 or higher or completion of equivalent GOAL course is required prior to General Studies courses.
- Accuplacer Arithmetic score at 50 or higher or completion of equivalent GOAL course is required prior to College Mathematics course.
- This program requires successful completion of a Criminal Background Check and a Caregiver Background Check. This means that you will have to verify that you have NO record with the Department of Justice and the Department of Health and Family Services that would prohibit you from working in a career-related profession. You will be asked to complete the check prior to your participation in a clinical or an internship placement.
- High School graduation or equivalent; a copy of your High School Transcript
- Application for admission and $30.00 fee; Admissions assessment
- Newly admitted program students are required to attend/complete a New Student Orientation (NSO) before registering for their first semester of courses. Attendance at the 4 hour, on campus, session in Appleton is highly recommended. (There is also an online version available for individuals who live a long distance from campus, but the information is limited, and does not include "how to register for classes.")
- When registering for the 1st semester of core Fire Protection courses (Term 23 on the Program Plan) you must register for all 3 core (503) courses at the same time. This includes Hazardous Materials (10-503-152), Firefighting Principles (10-503-142), and Principles of Emergency Services (10-503-139). Students who have completed state certification for Firefighter 1 are eligible for advanced standing credit for the Firefighting Principles course. All paperwork and fees must be processed in order to be eligible to register for Hazardous Materials and Principles of Emergency Services.
- Hepatitis B vaccination is strongly recommended

Employment Potential

As a fire protection technician, you protect life and property through fire prevention efforts and, if necessary, by proper firefighting principles and techniques. Upon graduation from the Fire Protection Technician program, you are well trained in the progressive, proactive philosophy of the modern fire service which emphasizes fire prevention and public education, as well as the traditional firefighting and emergency medical service components.

There is a 2 plus 2 agreement in place between UW-Oshkosh and Fox Valley Technical College, which will allow a student to get a bachelor's degree in Fire and Emergency Response Management.

Note

- Helpful High School Courses: Four years of English; speech; two years of math (Algebra I); chemistry; computer keyboard skills; and physical education are beneficial.
- Class size is limited to 36 new students each semester.
- Information: NWTC Admissions, (920) 498-5444 or (888) 385-6982 or www.nwtc.edu
- Students will be required to provide their own boots, hood, and gloves during the Firefighting Principles class.
- The required course work is rigorous. For every credit (hour in class/week) students should plan to spend two hours outside of class time in independent study. Class schedules vary each semester so plan to have a flexible employment schedule while enrolled in the program.

Internship

Students are required to complete an internship at a local fire department. The internship will consist of 24-hour shifts which rotate to coincide with the fire department's shift schedule.

Curriculum

The Fire Protection Technician Associate Degree is a two-year, four-semester program offered through a partnership between Northeast Wisconsin Technical College and Fox Valley Technical College. Upon graduation, students will have completed 69 credits (with 3 credits of electives obtained from Fox Valley Technical College).

GENERAL STUDIES

Catalog No.	Description	Credits
10-801-136	English Composition 1	3
	OR	
10-801-195	Written Communication	3
10-801-198	Speech	3
10-804-107	College Mathematics	3
10-806-134	General Chemistry	4
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
TOTAL GENERAL STUDIES CREDITS		**22**

TECHNICAL STUDIES

Catalog No.	Description	Credits
10-107-150	Microcomputer Applications	2
10-503-101	Technical Rescue	4
10-503-130	Fire Protection Internship	2
10-503-139	Principles of Emergency Svcs	3
10-503-142	Fire Fighting Principles	4
10-503-143	Building Construction	3
10-503-147	Fire Protection Systems	4
10-503-151	Fire Prevention	4
10-503-152	Hazardous Materials	4
10-503-155	Fire Protection Hydraulics	4
10-503-156	Strategies, Tactics, Inc Mgmt	4
10-503-157	Fire Investigation	3
10-531-102	EMT Basic	3
TOTAL TECHNICAL STUDIES CREDITS		**44**
	*ELECTIVE CREDITS	3
TOTAL PROGRAM CREDITS		**69**

*SUGGESTED ELECTIVES
Spanish 1 Fire Protection, 10-140-174
Fire Protection Internship-Extended, 10-503-131
Fire Protection Independent Study 1, 10-503-132
Fire Protection Independent Study 2, 10-503-133
Firefighter Fitness, 10-503-135
Health and Wellness for Firefighters, 10-599-101
College Success 1, 10-890-100
Employability Strategies, 10-890-103
Classes required for FVTC Paramedic program can be used as electives for the Fire Protection program

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-107-150 MICROCOMPUTER APPLICATIONS ...designed for students with little or no hands-on computer experience. Presents the basic functions of the Windows operating system and how to use the word processing, spreadsheet and presentation functions of Microsoft Office software. Students will integrate various functions of several Microsoft packages.

10-503-101 TECHNICAL RESCUE ...exposes the student to labor-intensive requirements in team-based technical rescue. Students will be trained in rope rescue, confined space rescue and trench rescue to the technician level. Pre-Corequisites: Principles of Emergency Services (10-503-139 or 10-503-100); Fire Fighting Principles (10-503-142 or 10-503-102) or Firefighter I State Certification and advanced standing in Firefighting Principles

10-503-130 FIRE PROTECTION INTERNSHIP ...provides an opportunity for students to perform the duties of a municipal firefighter while serving the typical 24-hour shift, excluding FVTC class periods, at one of several fire departments. Fire department officers evaluate student performance. Department consent required.

10-503-139 PRINCIPLES OF EMERGENCY SERVICES ...provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; and fire service nomenclature. (Prerequisite: Admission to Fire Protection Technician program; Corequisites: Fire Fighting Principles, 10-503-142 OR 10-503-102; Hazardous Materials, 10-503-152 OR 10-503-108, OR Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-142 FIRE FIGHTING PRINCIPLES ...basic fire behavior, techniques for control structural, related fire emergencies, life safety practices; covers practical evolutions necessary to control and extinguish fires; satisfies all requirements for Firefighter 1 certification. (Prerequisite: Admission to the Fire Protection Technician program; Corequisites: Principles of Emergency Services, 10-503-139 OR 10-503-100; Hazardous Materials, 10-503-152 OR 10-503-108)

10-503-143 BUILDING CONSTRUCTION ...provides the components of building construction that relate to fire and life safety. (Pre/Corequisite: Principles of Emergency Services, 10-503-139 OR 10-503-100)

10-503-147 FIRE PROTECTION SYSTEMS ...provides information relating to the features of design and operation of fire detection and suppression systems. (Pre/Corequisite: Principles of Emergency Services, 10-503-139 OR 10-503-100)

10-503-151 FIRE PREVENTION ...provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use of fire codes, and identification and correction of fire hazards. Meets all requirements for Fire Inspector 1 certification with the State of Wisconsin. (Pre/Corequisites: Principles of Emergency Services, 10-503-139 OR 10-503-100; Fire Fighting Principles, 10-503-142 OR 10-503-102, OR Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-152 HAZARDOUS MATERIALS ...examines characteristics relating to hazardous materials including problems of recognition and mitigation. Prepares students for Hazardous Materials Technician Level. (Prerequisite: Admission to the Fire Protection Technician program; Corequisites: Principles of Emergency Services, 10-503-139 OR 10-503-100; Fire Fighting Principles, 10-503-142 OR 10-503-102)

10-503-155 FIRE PROTECTION HYDRAULICS ...provides a foundation of knowledge in order to understand the principles of the use of water in fire protection. Meets all of the requirements for the Driver Operator-Pumper certification with the State of Wisconsin. (Pre/Corequisites: Principles of Emergency Services, 10-503-139 OR 10-503-100; Fire Fighting Principles, 10-503-142 OR 10-503-102, OR Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-156 STRATEGIES, TACTICS, AND INCIDENT MANAGEMENT ...provides an in-depth analysis of the principles of emergency response through utilization of an incident management system. Prepares students to pursue current national ICS training requirements. (Pre/Corequisites: Principles of Emergency Services, 10-503-139 OR 10-503-100; Fire Fighting Principles, 10-503-142 OR 10-503-102, OR Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-157 FIRE INVESTIGATION ...provides learners with the fundamentals and technical knowledge needed for proper fire scene investigations. (Pre/Corequisite: Principles of Emergency Services, 10-503-139 OR 10-503-100, OR enrollment in an investigation-related ITS degree program, 10-825-1)

10-531-102 EMERGENCY MEDICAL TECHNICIAN BASIC ...preparatory aspects, airway management, patient assessment, medical/behavioral cases, trauma care, pediatric cases, and field operations in basic life-support emergency medical care. (Prerequisite: Accepted into the Emergency Medical Technician-Basic program.)

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Gas Utility Construction and Service
Program Code 314692
Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Gas Utility Construction and Service prepares students to install, maintain, and operate natural and propane gas distribution systems used to supply residential, commercial, and industrial customers.

Program Outcomes

- Communicate technical information.
- Operate tools and equipment.
- Join pipe.
- Install propane gas distribution systems.
- Install natural gas distribution systems.
- Apply customer service skills.
- Maintain gas distribution systems.
- Operate pipeline excavation equipment.
- Service gas appliances.
- Opportunity to secure a commercial driver's license (CDL).

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be able to obtain a commercial driver's license.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 86; Arithmetic: 66; Sentence Skills: 84; Algebra: 54. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Note

- Students receive a certificate from the Midwest Energy Association. This certificate is recognized throughout the United States.
- Students also receive selected Pipeline Operator qualifications as mandated by the Federal Office of Pipeline Safety.
- Students who have completed the Gas Utility Construction and Service technical diploma program have the opportunity to fulfill the requirements for a Utility Management certificate and/or apply these credits toward a Leadership Development and/or an Individualized Technical Studies associate's degree.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Propane Gas Delivery Person: delivers bulk propane gas to customers and interacts with customers.

New Customer Tank and Cylinder Installer: installs propane and connects piping to customer appliances.

Bulk Plant Operator: fills and maintains cylinders and fills bulk delivery trucks.

Gas Construction Mechanic: installs and maintains gas distribution and transmission pipelines using trenching, backhoe, underground road boring, plastic fusion, welding, mapping, and record keeping skills.

Gas Meter Mechanic: installs, repairs, and maintains electronic and mechanical gas metering equipment.

Gas Service Mechanic: installs and maintains residential, commercial, and industrial gas piping, valving, pressure regulating, and overpressure protective equipment.

Gas Clerk-Estimator: develops specifications and related maps and records used in installing and maintaining gas distribution facilities. Records of this type are manual but are moving towards computer emphasis.

Gas Regulator Maintenance Mechanic: installs and maintains high pressure gas regulating, measuring, odorizing, heating, filtering, valving, and piping systems; electronically and mechanically operated equipment are involved.

Gas Appliance Repair Mechanic: maintains and troubleshoots residential and/or commercial gas appliances and heating/cooling equipment.

Underground Facilities Locator: locates and marks all underground facilities prior to excavation using various locating equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Construction Crew Foreman
- Corrosion Technician
- Meter and Regulator Technician
- Utility Locating Supervisor
- Pipeline Welder
- Vendor Sales and Marketing

Curriculum

The Gas Utility Construction and Service Technical Diploma is a nine-month, three-semester program. This program starts in June. Upon graduation, a student will have completed 32 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-442-315	Welding-Gas Service 1	2
31-469-310	Gas Utility Field Trng 1	4
	SEMESTER TOTAL	8

SECOND SEMESTER

31-413-348	Electricity-Basic	2
31-422-310	Metallurgy	2
31-442-325	Welding-Gas Service 2	2
31-469-320	Gas Utility Field Trng 2	5
31-469-330	Gas Utility Field Trng 3	5
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	17

THIRD SEMESTER

31-413-358	Electricity-Gas Applianc	2
31-469-340	Gas Utility Field Trng 4	4
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	7
	TOTAL CREDITS	32

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to www.nwtc.edu and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-413-348 ELECTRICITY-BASIC ...electron theory, electrical terms, Ohm's Law, DC and AC circuits, magnetism and magnetic devices, electrical measurements, inductance and capacitance, relays and transformers, motors and generators, circuit protective devices, electrical safety. (Prerequisite: Accepted into Gas Utility Construction & Service)

31-413-358 ELECTRICITY-GAS APPLIANCE ...electrical sources/circuits in gas appliances, safe practices, test equipment, reading wiring diagrams, gas/electrical control functions, ignition systems, sequence of operation and troubleshooting. (Prerequisite: 31-413-348, Electricity Basic)

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-315 WELDING-GAS SERVICE 1 ...position pipe welding utilizing oxyacetylene and gas metal arc welding, welding safety, weld faults and causes, weld joint design, and fitup. (Prerequisite: Accepted into Gas Utility Construction & Service)

31-442-325 WELDING-GAS SERVICE 2 ...position pipe welding utilizing gas metal arc welding and shielded metal arc welding processes, pipe fitup, and pipe weld testing according to API 1104 code. (Prerequisite: 31-442-315, Welding-Gas Service 1)

31-469-310 GAS UTILITY FIELD TRAINING 1 ...construction equipment safety and operation (trenching, backhoe, boring), equipment maintenance, gas and vehicular safety, field mapping. (Prerequisite: Accepted into Gas Utility Construction & Service)

31-469-320 GAS UTILITY FIELD TRAINING 2 ...natural gas line installation standards for plastic pressure testing, fusion, leak detection procedures, general installation procedures and repair of plastic mains and services, introduction to propane gas systems and safety. (Prerequisite: 31-469-310, Gas Utility Field Training 1)

31-469-330 GAS UTILITY FIELD TRAINING 3 ...installation and repair of steel mains and services, applied field welding and maintenance, line testing and leak detection procedures, approved safety installation procedures using hand tools and supportive equipment. (Prerequisite: 31-469-320, Gas Utility Field Training 2)

31-469-340 GAS UTILITY FIELD TRAINING 4 ...installation, maintenance, and repair of residential gas appliances, venting codes, line stoppering equipment, corrosion control, regulators, metering, first aid, and customer service training. (Prerequisite: 31-469-330, Gas Utility Field Training 3)

General Studies Transfer (UW-Green Bay or UW-Oshkosh)
Program Code 108001

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description
The General Studies Transfer program includes a 32-credit core of courses designed to meet specific general education requirements at UW-Green Bay or UW-Oshkosh. Additional admission requirements and fees may apply.

Program Outcomes
- Course completion will allow students to qualify for sophomore status at UW-Green Bay or UW-Oshkosh. Completers who have a 2.5 overall Grade Point Average may submit an application to either university.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 64; Arithmetic: 55; Sentence Skills: 74. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor, (920) 498-5444 or (888)385-6982.

Note
- All requirements and fees for enrollment at UW-Green Bay or UW-Oshkosh will apply and are subject to change.
- For more information on UW-Green Bay, go to UW-Green Bay Admissions Office Web site: www.uwgb.edu/admissions
- For more information on UW-Oshkosh, go to UW-Oshkosh Admissions Office Web site: http://admissions.uwosh.edu
- If you did not successfully complete Algebra in high school you would be required to take Elementary Algebra 10-804-110 before taking Intermediate Algebra.

Curriculum
The General Studies Transfer program is a 32-credit program. Please follow the curriculum list for your intended transfer school.

GENERAL STUDIES TRANSFER UW-GREEN BAY

Catalog No.	Description	Credits
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
10-806-189	Basic Anatomy	3
10-806-154	General Physics 1	4
OR		
10-806-134	General Chemistry	4
10-806-112	Principles of Sustainability	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3
10-809-197	Contemporary Amer Society	3

Complete 2 courses (6 credits) from the following:

10-809-122	Intro to Amer Govt	3
10-809-188	Developmental Psychology	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
	TOTAL CREDITS	32

GENERAL STUDIES TRANSFER UW-OSHKOSH

10-801-195	Written Communication	3
10-801-197	Technical Reporting	3
10-801-198	Speech	3
OR		
10-801-196	Oral/Interpersonal Comm	3
10-804-118	Interm Algebra w Apps	4
10-806-154	General Physics 1	4
OR		
10-806-134	General Chemistry	4
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3

Complete 3 courses (9 credits) in at least 2 areas from the following:

AREA ONE

10-809-159	Abnormal Psychology	3
OR		
10-809-188	Developmental Psychology	3

AREA TWO

10-809-195	Economics	3

AREA THREE

10-809-122	Intro to Amer Govt	3
OR		
10-809-196	Intro to Sociology	3
OR		
10-809-197	Contemporary Amer Society	3
OR		
10-809-198	Intro to Psychology	3
OR		
10-809-199	Psychology Of Human Relations	3
	TOTAL CREDITS	32

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

10-801-195 WRITTEN COMMUNICATION ...the nature and scope of academic and business writing. Develops writing skills which include pre-writing, drafting, revising, and editing. A variety of writing assignments are designed to help the learner analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Also develops critical reading and thinking skills through the analysis of a variety of written documents. (Prerequisite: Accepted in the UW-Oshkosh General Studies Transfer Certificate)

10-806-189 BASIC ANATOMY ...examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems. (Prerequisite: Recommendation: High School Chemistry or High School Biology with a "C" or better OR College Chemistry or College Biology or College General Anatomy transfer credit with a grade of "C" or better)

10-806-112 PRINCIPLES OF SUSTAINABILITY ...prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S., and analyze approaches used by your community to promote and implement sustainability.

10-809-122 INTRO TO AMER GOVERNMENT ...introduces American political processes and institutions: focusing on rights/ responsibilities of citizens and the process of participatory democracy. Examines separation of powers and checks/balances & the roles of different groups.

10-801-196 ORAL/INTERPERSONAL COMMUNICATION ...the communication process, perception and self-concept, language, listening, nonverbal communication, interpersonal relationships, communication in groups and public communication; prepare and deliver an oral presentation.

10-801-136 ENGLISH COMPOSITION 1 ...learners develop knowledge/skills in planning, organizing, writing, editing. Students will also analyze audience/purpose, use elements of research, format documents using standard guidelines, and develop critical reading skills.

10-804-118 INTERM ALGEBRA WITH APPLICATIONS ...algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. (Prerequisites: Recommendation: Accuplacer Algebra Test = 61 OR Accuplacer (College Level Math) = 40 OR Completion of 10-804-110, Elementary Algebra w Apps OR 10-804-120, Math-Tech Algebra with grade "C" or better).

10-806-134 GENERAL CHEMISTRY ...covers chemistry fundamentals. Topics: metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws. (Prerequisite: Recommendation: Completion of one year of High School Algebra with a "C" or better)

10-806-154 GENERAL PHYSICS 1 ...applications/theory of basic physics principles: problem-solving, laboratory investigation, and applications including unit conversion and analysis, vectors, translational and rotational kinematics/dynamics, heat/temperature, and harmonic motion and waves. (Prerequisite: Recommendation: 10-804-118, Intermediate Algebra with Apps with a grade of "C" or better)

10-809-166 INTRO TO ETHICS: THEORY & APP ...basic understanding of theoretical foundations of ethical thought; analyze/compare relevant issues using diverse ethical perspectives; critically evaluate individual, social/professional standards of behavior--applying a systematic decision-making process.

10-809-172 RACE ETHNIC & DIVERSITY ...basic American values of justice and equality by teaching vocabulary, history of immigration/ conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA.

10-809-188 DEVELOPMENTAL PSYCHOLOGY ...defines human development; examines theories; heredity and environmental effects; prenatal development and birth; evaluates biosocial, cognitive psychosocial development through the life span; aging, death, and dying.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-809-196 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology.

10-809-197 CONTEMPORARY AMER SOCIETY ...the major social institutions within the American society: government, family, education, religion, and economic system.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings.

10-801-197 TECHNICAL REPORTING ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 10-801-136, English Composition 1 OR 10-801-195, Written Communication)

10-801-198 SPEECH ...fundamentals of effective oral presentation to small and large groups: topic selection, audience analysis, methods of organization, research, structuring evidence and support, delivery techniques, and the listening process.

10-809-159 ABNORMAL PSYCHOLOGY ...surveys features, causes, assessment and treatment of abnormal behavior through major theoretical perspectives. Introduces the diagnosis system of the DSM-IV, the history, cultural/social differences, current perspectives, diagnosis criteria/ treatments. (Prerequisite: Recommendation: Completion of 10-809-198, Introduction to Psychology)

10-809-199 PSYCHOLOGY OF HUMAN RELATIONS ...decision making, motivation, conflict resolution, learning strategies, growth and adjustment, diversity, psychological theories, relationships, psychological disorders, stress, career analysis, social psychology, and lifespan development.

Gerontology *(pending WTCS approval April 2011)*
Program Code 105441
Associate Degree

This program is fully eligible for financial aid.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

The Gerontology program will prepare learners with the theoretical knowledge and practical experience necessary to enter the job market, or enhance their existing careers in service delivery roles as well as leadership roles in the gerontology field. Graduates of this program will possess an understanding of the multidisciplinary nature of gerontology, which includes psychological, sociological and physiological changes that occur during late adulthood.

Program Outcomes

- Provide recommendations for successful aging and optimal quality of life.
- Evaluate physical, social, psychological and spiritual aspects of aging.
- Identify and refer older adults to needed services.
- Exhibit behaviors and conduct that reflect safe, legal, and ethical gerontological practices.
- Evaluate and advocate in the area of aging public policy.
- Exhibit professional communication.
- Develop ethical and cultural awareness related to aging.
- Plan, develop, implement and deliver appropriate activities to meet physical, social, psychological needs of the aging population.
- Create a personal professional development plan.
- Investigate and incorporate evidence-based gerontology practices into delivery of services.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 78; Arithmetic: 66; Sentence Skills: 78. Remediation options are available to reach required score. Equivalent assessments scores are acceptable. To learn more about these assessments and program benchmarks scores, please contact a counselor, (920) 498-5444 or (888) 385-6982.
- Attend a mandatory spring program orientation.

Internship

- Students will be required to pay for liability insurance, provide their own transportation to internship sites, and cover any other expenses related to internship experiences. Students may be expected to travel distances to internships.
- Dependent on the site, students may be required to complete a 2-step TB test and CPR certification prior to their internship. Students may be required by the internship site to complete a physical examination and/ or provide proof of immunizations prior to interning.

Employment Potential

A graduate of this program will have the potential for employment as:

Direct Service Provider: works one-on-one with older persons and their families to assess needs, knowledge of resources and delivery of services.

Program Planner and Evaluator: surveys the community to gauge the interests and needs of older persons, designing programs to meet these needs, and evaluating the programs' effectiveness.

Manager/Administrator: supervises and directs the daily operation of facilities, agencies, or programs that serve the aging population.

Marketing and Product Development Professional: targets unmet product and service needs of older persons. Develops and implements solutions to enhance productivity and independence. Educates and refers the aging population to creative technologies that may allow them to "age in place."

Advocate: fosters policies and programs to benefit the aging based on knowledge of unmet needs and the ability to communicate in public and private forums.

Educator/Trainer: develops and delivers educational programming responsive to the needs of older persons or those who serve them, including informal caregivers.

Researcher: studies the aging process and investigates the effectiveness of intervention programs and policies.

Environmental Designer: designs safe living environments for the older population.

Financial Management/Legal Support Service Provider: serves as primary contact person for management of financial and legal issues for aging clients and their families.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/ practicum placement or guarantee graduation within typical program timing.

Flexible Learning Option

- The entire Gerontology program is offered online WITH THE EXCEPTION of the internship in the fourth semester.
- The program may be completed in a part-time or full-time format.

Curriculum

The Gerontology-Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-121	Micro: Word-Intro	1
* 10-544-201	Intro to Gerontology	3
* 10-544-202	Physical Aspects of Aging	3
10-801-136	English Composition 1	3
10-809-103	Think Critically & Creatively	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16

SECOND SEMESTER

Catalog No.	Description	Credits
* 10-544-203	Healthy Aging	3
* 10-544-204	Social Gerontology	3
* 10-544-205	Alzheimer's and Dementia Disea	2
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
10-809-188	Developmental Psychology	3
	SEMESTER TOTAL	17

THIRD SEMESTER

Catalog No.	Description	Credits
10-101-106	Accounting-for Non-Accountants	3
10-104-191	Customer Service	3
* 10-544-206	Death and Dying	3
* 10-544-207	Legal & Ethical Issues Aging	3
* 10-544-208	Developing Gerontology Profess	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

Catalog No.	Description	Credits
10-104-110	Marketing Principles	3
10-196-191	Supervision	3
* 10-544-209	Programs and Services in Aging	3
* 10-544-210	Generations & Diversity Aging	3
* 10-544-211	Gerontology Internship	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	66

CURRICULUM NOTE

* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-544-201 INTRO TO GERONTOLOGY ...a general overview of the field of aging. Topics include demographic, biological, psychological, and social aspects of the aging process.

10-544-202 PHYSICAL ASPECTS OF AGING ...study of normal and pathological changes occurring in the aging human body with special emphasis on age-related chronic diseases. Includes analysis of biological theories of aging, cultural and ethnic influence on aging pathologies, and other factors impacting the aging process. (Corequisite: 10-544-201, Intro to Gerontology)

10-544-203 HEALTHY AGING ...overview of practices to promote healthy aging. This course will address nutrition, physical activity and prevention practices as well as an overview of medications commonly prescribed for the older adult. Emphasis will focus around the "well" elderly population and practices identified to address current aging trends.

10-544-204 SOCIAL GERONTOLOGY ...review of aging in respect to social roles and processes. Topics include history of aging, demographics, family relationships, social supports, economics, retirement, widowhood, poverty and politics of aging. (Prerequisite: 10-544-201, Intro to Gerontology)

10-544-205 ALZHEIMER'S AND DEMENTIA DISEASE ...study of Alzheimer's disease and other forms of dementia. Students will differentiate between stages of dementia and Alzheimer's disease. By analyzing normal brain processes and how these diseases affect brain function, students gain insight on best practices in responding to the needs of this population and their caregivers and loved ones.

10-544-206 DEATH AND DYING ...study of losses during the aging process beyond the physical and emotional process of death and dying. Societal and personal views of death, dying, and bereavement and recommendations for healthy transitions in coping with loss will be explored.

10-544-207 LEGAL & ETHICAL ISSUES OF AGING ...covers concepts and structures involved in the legal and ethical realm of gerontology including Power of Attorney for Health Care/Finance, guardianships, trusts, reallocation of assets, spending down, Medicare/Medicaid benefits, supplemental insurance, Social Security, elder abuse/neglect, financial exploitation, reporting abuse/neglect and relevant governmental policy. Learners will be able to apply knowledge by learning advocacy techniques to benefit senior populations on a community, local, and federal level. (Co/Prerequisite: 10-544-201, Intro to Gerontology)

10-544-208 DEVELOPING THE GERONTOLOGY PROFESSIONAL ...exploration of effective communication styles and interview techniques for developing rapport and relationships with aging populations. Other topics include ethics and boundaries, self-determination, case plan development and implementation, documentation skills, research and grant funding, and compassion fatigue. (Prerequisites: 10-544-201, Intro to Gerontology; 10-544-202, Physical Aspects of Aging; 10-544-203, Nutrition for Healthy Aging; 10-544-204 Social Gerontology; 10-544-205, Alzheimer's and Dementia Disease)

10-544-209 PROGRAMS AND SERVICES IN AGING ...an overview of social policy as it relates to aging and available federal funding for the senior consumer. Students will learn the resources available in the community, eligibility criteria, and how to access and coordinate services for seniors. Supplementing social networking and enhancing mental health functioning for the aging population will also be discussed. Students will explore different career fields within gerontology. (Prerequisites: 10-544-206, Death and Dying; 10-544-207, Legal and Ethical Issues of Aging; 10-544-208, Developing the Gerontology Professional)

10-544-210 GENERATIONS AND DIVERSITY IN AGING ...generational study and how experience and history affect the value and societal expectations of each generation. Also covered will be diversity trends among older adults including but not limited to race, ethnicity, culture, sexual orientation and physical, cognitive and developmental disabilities. Focus on accommodations and accessibility for older adults; in-depth discussion and service learning project on intergenerational programming required. (Prerequisite: 10-544-201, Intro to Gerontology)

10-544-211 GERONTOLOGY INTERNSHIP ...students integrate concepts from all previous courses through supervised training in an appropriate setting and actual work experience and observation. Learners will further develop their critical thinking skills through communications and counseling experience, client assessment and case plan development and implementation. Learners will also share experiences and provide feedback online throughout the course. (Prerequisites: 10-544-206, Death and Dying; 10-544-207, Legal and Ethical Issues of Aging; 10-544-208, Developing the Gerontology Professional; Corequisites: 10-543-209, Programs and Services in Aging;10-543-210, Generations and Diversity in Aging)

Health Care Business Services
Program Code 101601
Associate Degree

This program is fully eligible for financial aid.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description
Health Care Business Services prepares a student to work in the business office of medical and dental clinics, hospitals, nursing homes, related healthcare facilities, and health insurance settings in administrative, financial, and customer service roles.

Students who have an interest in the business and information aspects of healthcare, but are unsure of their preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes
- Follow federal, state, and local laws and regulations.
- Identify marketing methods and benefits for health care facilities.
- Use service and managed care contracts.
- Process patient accounts receivables.
- Schedule patient appointments.
- Use medical terminology.
- Use ICD 9 and CPT 4 coding.
- Complete and process health insurance claim forms.
- Process medical records release and storage procedures.
- Identify components of the U.S. healthcare delivery system.
- Apply computer skills specific to health care and health insurance.
- Record accounting and financial transactions in a medical setting.
- Use a computer keyboard.
- Investigate effective telephone techniques.
- Explore components of the employment interview.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a Counselor.)
- Typing proficiency of 30 words per minute (mandatory preadmission typing test to be taken at the NWTC Assessment Center).

Employment Potential
A graduate of this program will have the potential for employment as:
- Admitting Representative
- Appointment Scheduler
- Claims Analyst
- Insurance Billing Specialist
- Medical Records Associate
- Patient Services Representative
- Patient Accounts Associate
- Provider Relations Associate
- Financial Counselor
- Medical and Insurance Customer Service Representative

With additional education and/or work experience, graduates may find other opportunities for employment.
- Clinic Office Supervisor or Manager
- Hospital Administrative Assistant
- Medical Credit Manager
- Nursing Home Administrator
- Nursing Home Administrative Assistant
- Patient Accounts Supervisor
- Health Insurance Supervisor/Trainer
- Certified Coding Specialist
- Health Insurance Provider Contract Analyst
- Physician Relations Administrator

Internship
Students will be required to pay for liability insurance, provide their own transportation to internship sites, and cover any other expenses related to internship experiences. Students may be expected to travel distances to internships.

Students will be required to complete a 2-step TB test and Caregiver Background Check prior to their internship. Students may be required by the internship site to complete a physical examination and/or provide proof of immunizations prior to interning.
Students are required to petition for an internship assignment. Students may petition by submitting a "Petition to Enter Internship" form to the Health Sciences Department office according to the following schedule:
- Spring semester internship deadline is September 30.
- Fall semester internship deadline is February 28.
NWTC will make every effort to place students in the semester they request. However, NWTC cannot guarantee an internship site assignment in the semester being requested.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT must be acheived. College Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring program orientation.

Curriculum
The Health Care Business Services Associate Degree is an on-line, two-year, four-semester program. Upon graduation, a student will have completed 65 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
10-103-121	Micro: Word-Intro	1
* 10-501-101	Medical Terminology	3
* 10-530-172	Healthcare Delivery Systems	2
* 10-530-176	Health Data Management	2
* 10-530-181	Intro to Health Record	1
10-801-136	English Composition 1	3
* 10-806-189	Basic Anatomy	3
	SEMESTER TOTAL	16

SECOND SEMESTER
Catalog No.	Description	Credits
10-103-131	Micro: Excel-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
* 10-160-161	Insurance Health Principles	3
* 10-530-155	Diagnostic/Procedure Coding	3
* 10-530-178	Healthcare Law & Ethics	2
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	16

THIRD SEMESTER
Catalog No.	Description	Credits
10-101-106	Accounting-for Non-Accountants	3
10-103-141	Micro: Access-Intro	1
10-104-191	Customer Service	3
* 10-160-143	Medical Practice Proc	3
* 10-160-151	Healthcare Relations	2
* 10-501-102	Intro to Dental Terminology	1
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
* 10-160-140	HCBS Internship	3
* 10-160-165	HCBS Organizational Resources	2
* 10-160-166	Medical Billing Processes	3
10-809-172	Race Ethnic & Diversity	3
10-809-196	Intro to Sociology	3
10-809-195	Economics	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	65

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.
- A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.
- It is recommended that students interested in pursuing a degree in Health Information Technology should take ICD Diagnosis Coding (10-530-197) and CPT Coding (10-530-184) in place of Diagnostic/Procedure Coding (10-530-155).

Flexible Learning Option
- The majority of Health Care Business Services program courses are offered on-line.
- The program may be completed in a part-time or full-time format.

The following certificates/technical diplomas may be applied toward this program:
901041, Health Care Business Services

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-160-140 HEALTHCARE BUSINESS SERVICES INTERNSHIP ...career planning, resumes, interviews, search strategy, actual health care work experience, applied workplace improvements and ethical model. (Prerequisites: Accepted in the Health Care Business Services Program; 10-530-155, Diagnostic/Procedure Coding; Corequisite: 10-160-166, Medical Billing Processes)

10-160-143 MEDICAL PRACTICE PROCEDURES ...professional duties, medical scheduling, admissions, medical office software, 10-key, third-party payer processes, managed care procedures, empathy, diversity, medical records, confidentiality, information systems, regulation, office medical administration. (Prerequisite: 10-103-111, Micro: Windows Intro; 10-103-121, Micro: Word-Intro; 10-530-176, Health Data Management)

10-160-151 HEALTHCARE RELATIONS ...financing of healthcare, managed care participants and products, integrated systems, organizational structure, provider networks, purchasers, cost containment, quality of care, regulation, and accountability. (Prerequisite: 10-160-161, Insurance Health Principles)

10-160-161 INSURANCE HEALTH PRINCIPLES ...this course presents common health insurance terminology. Students are introduced to various insurance programs including: private health insurance, dental insurance, Workers' Compensation, disability insurance, dental insurance, hospital insurance, government plans including: Medicare, Medicaid and TriCare. (Corequisite: 10-530-172, Healthcare Delivery Systems)

10-160-165 HCBS ORGANIZATIONAL RESOURCES... a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Corequisite: 10-160-143, Medical Practice Procedures)

10-160-166 MEDICAL BILLING PROCESSES ...optimizing key billing and collection processes; breaking down the billing and collection process; granting credit in a medical facility; examine expected performance outcomes and advanced billing practices. (Prerequisites: 10-101-106, Accounting for Non-Accountants; 10-160-143, Medical Practice Procedures)

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-501-102 INTRODUCTION TO DENTAL TERMINOLOGY ...this course introduces dental vocabulary and terms used in the dental office. Topics include word parts, root words and basic dental terminology.

10-530-155 DIAGNOSTIC/PROCEDURE CODING ...the International Classification of Diseases and Current Procedural Terminology with emphasis on coding skills, use of this classification system in health care settings, its application for statistical and reimbursement purposes. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy)

10-530-172 HEALTHCARE DELIVERY SYSTEMS ...examines the organization, financing, regulation, and delivery of health care services. Includes the study of healthcare professionals.

10-530-176 HEALTH DATA MANAGEMENT ...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisites: 10-530-181, Intro to Health Record; 10-530-172, Healthcare Delivery Systems)

10-530-178 HEALTHCARE LAW & ETHICS ...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management)

10-530-181 INTRO TO THE HEALTH RECORD ...illustrate the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.

Health Information Technology
Program Code 105301
Associate Degree

This program is fully eligible for financial aid.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

This field is where healthcare meets the cutting edge of technology! The Bureau of Labor Statistics cites health information as one of the fastest growing occupations in the U.S. Health Information Technicians contribute to the quality of care by collecting, analyzing, and reporting health care data. This requires knowledge of disease, treatments, computer systems, and organizational skills.

Students who have an interest in the business and information aspects of health care, but are unsure of their preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes

- Adhere to health information requirements and standards.
- Utilize clinical classifications.
- Support data collection and reimbursement systems.
- Abstract health care data for analysis and presentation.
- Adhere to security, privacy and confidentiality policies.
- Use information technology systems to process health information.
- Apply organizational management techniques to improve efficiency of departmental functions and services.
- Model professional behavior, ethics, and appearance.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Professional Practice Experience

Students will be required to provide their own transportation to assigned sites, and cover any other expenses related to professional experiences. Students may be expected to travel distances to assigned sites.

Students will be required to complete a 2-step TB test, physical examination, and provide current immunization information three months prior to Professional Practice. Students are required to petition for a professional practice assignment. Students may petition by submitting a "Petition to Enter Professional Practice" form to the Health Sciences Department office according to the following schedule:

- Spring semester Professional Practice deadline is September 30.
- Fall semester Professional Practice deadline is February 28. NWTC will make every effort to place students in the semester they request. However, NWTC cannot guarantee an assignment in the semester being requested.

Employment Potential

A graduate of this program will have the potential for employment in the following settings: hospitals, clinics, nursing homes, mental health facilities, home health agencies, state and federal health agencies, and private industry as a (an):

- Coding Specialist
- Release of Information Specialist
- Health Information Technician
- Insurance/Business Specialist
- Reimbursement Coordinator
- Data Quality & Integrity Monitor
- Privacy and/or Security Officer
- Data Analyst
- HIM Supervisor
- Cancer Registrar

Accreditation

The Health Information Technology program is accredited by the Commission on the Accreditation for Health Informatics and Information Management Education (CAHIIM).

Board/Certification Examinations

Graduates of the program are eligible to take the national accreditation examination offered by the American Health Information Management Association (AHIMA) to become a Registered Health Information Technician (RHIT).

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a Counselor.)
- Two semesters in High School, or one semester in College of Biology, or equivalent, with a grade of "C" or better.
- Typing proficiency of 30 words per minute (mandatory preadmission typing test to be taken at the NWTC Assessment Center).

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT must be acheived. College Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring program orientation.
- Submit Caregiver Background Check paperwork.

Note

- A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.
- Students considering going on to a 4-year HIA Degree or Cancer Registrar Certification should consider taking General Anatomy & Physiology in place of Basic Anatomy.

Curriculum

The Health Information Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
10-103-121	Micro: Word-Intro	1
* 10-501-101	Medical Terminology	3
* 10-530-172	Healthcare Delivery Systems	2
* 10-530-176	Health Data Management	2
* 10-530-181	Intro to Health Record	1
10-801-136	English Composition 1	3
* 10-806-189	Basic Anatomy	3
	SEMESTER TOTAL	16

SECOND SEMESTER

Catalog No.	Description	Credits
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
* 10-530-178	Healthcare Law & Ethics	2
* 10-530-182	Human Diseases for Hlth Prof	3
* 10-530-184	CPT Coding	3
* 10-530-197	ICD Diagnosis Coding	3
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	20

THIRD SEMESTER

Catalog No.	Description	Credits
* 10-530-177	Healthcare Stats & Research	2
* 10-530-185	Healthcare Reimbursement	2
* 10-530-190	Healthcare Info Systems	3
* 10-530-196	Professional Practice 1	3
* 10-530-199	ICD Procedure Coding	2
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	15

FOURTH SEMESTER

Catalog No.	Description	Credits
* 10-530-193	Healthcare Quality Mgmt	2
* 10-530-194	HIM Organizational Resource	2
* 10-530-195	Applied Coding	2
* 10-530-198	Professional Practice 2	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	66

CURRICULUM NOTE

* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability. The following courses are offered only in the fall semester and in person:

10-530-177, Healthcare Stats & Research
10-530-190, Healthcare Info Systems
10-530-196, HIT-Professional Practice 1

The following courses are offered only in the spring semester and in person:

10-530-193, Healthcare Quality Management
10-530-198, HIT-Professional Practice 2

Flexible Learning Option

- A majority of the Health Information Technology program courses are offered in an on-line format.
- This program may be completed in a part-time or full-time format.

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-530-172 HEALTHCARE DELIVERY SYSTEMS ...examines the organization, financing, regulation, and delivery of health care services. Includes the study of healthcare professionals.

10-530-176 HEALTH DATA MANAGEMENT ...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisites: 10-530-181, Intro to Health Record; 10-530-172, Healthcare Delivery Systems)

10-530-177 HEALTHCARE STATS & RESEARCH ...explores the management of medical data for statistical purposes. Focuses on descriptive statistics, including definitions, collection, calculation, compilation, and display of numerical data. Vital statistics, registries, and research are examined. (Prerequisite: 10-530-176, Health Data Management)

10-530-178 HEALTHCARE LAW & ETHICS ...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management)

10-530-181 INTRO TO THE HEALTH RECORD ...illustrate the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.

10-530-182 HUMAN DISEASES FOR THE HEALTH PROFESSION ...this course focuses on the common diseases of each body system as encountered in all types of health care settings by health information professionals. Emphasis is placed on understanding the etiology (cause), signs and symptoms, diagnostic tests, and treatment (including pharmacologic) of each disease. (Prerequisite: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy)

10-530-184 CPT CODING ...assign CPT codes supported by medical documentation at entry level; apply CPT instructional notations, conventions, rules, and official coding guidelines; case studies and actual medical record documentation. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-182, Human Diseases for Health Professions)

10-530-185 HEALTHCARE REIMBURSEMENT ...compare and contrast health care payers, illustrate the reimbursement cycle, comply with regulations for fraud and abuse. Assign Diagnosis Related Groups, Ambulatory Payment Classifications, and Resource Utilization Groups at entry-level. (Prerequisites: 10-501-101, Medical Terminology; 10-530-182, Human Diseases for Health Professions; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-197, ICD Diagnosis Coding; 10-530-199, ICD Procedure Coding; 10-530-184, CPT Coding)

10-530-190 HEALTHCARE INFORMATION SYSTEMS ...emphasizes the role of information technology in healthcare through an investigation of the electronic health record, business, and health information software applications. Assist in information systems design and implementation. (Prerequisites: 10-530-176, Health Data Management; 10-103-121, Micro: Word-Intro; 10-103-141, Micro: Access-Intro; 10-103-131, Micro: Excel-Intro; 10-103-151, Micro: Powerpoint-Intro; 10-103-111 Micro: Windows-Intro)

10-530-193 HEALTHCARE QUALITY MANAGEMENT ...addresses regulatory requirements as related to quality improvement, utilization (case) management, risk management, and medical staff credentialing through the use of quality improvement methodologies and tools. (Prerequisite: 10-530-177, Healthcare Stats & Research)

10-530-194 HIM ORGANIZATIONAL RESOURCES ...a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Corequisite: 10-530-193, Healthcare Quality Management)

10-530-195 APPLIED CODING ...assign ICD and CPT/HCPCS codes supported by medical documentation at intermediate level. Prepare appropriate physician queries in accordance with compliance guidelines and will assign codes to optimize appropriate reimbursement. (Prerequisites: 10-530-184, CPT Coding; 10-530-185, Healthcare Reimbursement; 10-530-197, ICD Diagnosis Coding; 10-530-199, ICD Procedure Coding)

10-530-196 PROFESSIONAL PRACTICE 1 ...this supervised clinical provides application of previously acquired skills and knowledge with experiences in the technical procedures of health record systems in a health care facility, discussion of clinical situations. (Prerequisites: 10-530-178, Healthcare Law & Ethics; 10-530-184, CPT Coding; 10-530-197, ICD Diagnosis Coding; Corequisites: 10-530-177, Healthcare Stats & Research; 10-530-199, ICD Procedure Coding)

10-530-197 ICD DIAGNOSIS CODING ...prepares students to assign ICD diagnosis codes supported by medical documentation with entry level proficiency. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD diagnosis codes to case studies and actual medical record documentation. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-182, Human Diseases for Health Professions)

10-530-198 PROFESSIONAL PRACTICE 2 ...this supervised clinical provides application of previously acquired skills and knowledge, discussion of clinical situations, preparation for the certification examination and pre-graduation activities. (Prerequisites: 10-530-196, Professional Practice 1; 10-530-190, Healthcare Information Systems; 10-530-199, ICD Procedure Coding; Corequisites: 10-530-193, Healthcare Quality Management; 10-530-195, Applied Coding; 10-530-194 HIM Organizational Resources)

10-530-199 ICD PROCEDURE CODING ...prepares students to assign ICD procedure codes supported by medical documentation with entry level proficiency. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD procedure codes to case studies and actual medical record documentation. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; 10-530-182, Human Diseases for Health Professions; Corequisite: 10-530-181, Intro to Health Records)

Heating, Ventilation, Air Conditioning and Refrigeration Technology

Program Code 106011

This program is fully eligible for financial aid.

Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description

Heating, Ventilation, Air Conditioning, and Refrigeration Technology prepares students to work with the control of air in respect to its heating, cooling, humidity, and cleanliness. Students will be able to install, service, troubleshoot, and repair HVAC/R systems.

Program Outcomes

- Startup, service, and repair HVAC/R systems.
- Troubleshoot HVAC/R systems.
- Develop, wire, and troubleshoot HVAC/R control circuits.
- Perform HVAC/R performance tests.
- Design and install HVAC/R piping systems.
- Evaluate airflow systems for new and existing applications.
- Determine heating and cooling demand requirements.
- Select heating and cooling equipment and auxiliary components.
- Safely utilize industry standard tools, meters, and test instruments.
- Communicate and document detailed service reports effectively.
- Prepare for EPA Refrigerant Handling Exam.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, please refer to Admissions.)
- Admission assessment or equivalent. (For a list of equivalents, please refer to Assessment.)
- High school algebra or equivalent.
- Students should have mastered high school Algebra and basic math skills. For a description of Algebra and basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 79; Sentence Skills: 78. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores please contact the Assessment Center (920) 498-5427 or (800) 422-NWTC, ext. 5427.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Mechanical Contractor HVAC/R Technician: installs, services, troubleshoots, and repairs HVAC/R systems at a customer's job site.

Facilities Maintenance HVAC/R Technician: installs, services, troubleshoots, and repairs HVAC/R systems as part of a maintenance staff.

HVAC/R Equipment Manufacturer Technician: assists service companies in locating, repairing, and preventing factory defects and service problems.

Wholesale Service Representative: assists HVAC/R contractors with the selection, application, and procurement of HVAC/R equipment.

Commercial HVAC/R Systems: works with the HVAC/R systems used in commercial applications such as office buildings, schools, stores, supermarkets, and restaurants. Duties include, but not limited to, installing, servicing, troubleshooting, and repairing walk-in coolers/freezers; reach-in coolers/freezers; ice makers; large air conditioning, heating, and air distribution systems; hydronic, steam, and forced air heating systems; roof top HVAC/R systems; and digital building automation control systems.

Industrial HVAC/R Systems: works with HVAC/R systems used in an industrial setting such as manufacturing, processing, and packaging plants. Duties include, but not limited to, installing, servicing, troubleshooting, and repairing large HVAC/R equipment used in the manufacturing process, such as drive-in coolers/freezers, process chillers and boilers, dust collection systems, plant air conditioning and heating, digital control of process, and building HVAC/R equipment.

Residential HVAC/R Systems: require the Technician to work with HVAC/R systems used in the home. Duties would include, but not limited to, installing, servicing, troubleshooting, and repairing refrigerator/freezers, central air conditioning system operating controls.

With additional education and/or work experience, graduates may find other opportunities for employment.
- HVAC/R Business Owner
- Energy Management Technician
- Engineering Assistant for HVAC/R Systems

Curriculum

Heating, Ventilation, Air Conditioning, and Refrigeration Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro OR	1
10-103-121	Micro: Word-Intro OR	1
10-103-122	Micro: Word-Part 2 OR	1
10-103-131	Micro: Excel-Intro OR	1
10-103-132	Micro: Excel-Part 2 OR	1
10-103-141	Micro: Access-Intro OR	1
10-103-142	Micro: Access-Part 2 OR	1
10-103-151	Micro: PowerPoint-Intro OR	1
10-103-160	Micro: Outlook	1
10-601-111	HVAC/R Electrical Fundamentals	3
10-601-114	HVAC/R Mechanical Service Fund	2
10-601-133	HVAC/R Refrigeration Fund	3
10-601-136	HVACR Safety	1
10-804-107	College Mathematics	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

SECOND SEMESTER

10-601-113	HVAC/R Refrig/Air Cond Syst	3
10-601-121	HVAC/R Heating Fundamentals	3
10-601-127	HVAC/R Control Circuits	3
10-601-128	HVAC/R Heating Systems	3
10-601-137	HVAC Mechanical Service Appl.	2
10-601-138	HVAC Sheet Metal for HVAC Tech	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-601-131	HVAC/R Heating System Applic	3
10-601-132	HVAC/R Air Conditioning Applic	3
10-601-147	HVAC/R Motor Control Appl	3
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-601-135	HVAC/R Hydronic System Applic	3
10-601-139	HVAC/R Building Plans and Spec	1
10-601-141	HVAC/R Systems Service	3
10-601-143	HVAC/R Refrigeration Appl	3
10-601-145	HVAC/R Control System Applic	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	68

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; text flow; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. Requires strong introductory Word skills or Word-Intro.

10-103-131 MICRO: EXCEL-INTRODUCTION

...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-142 MICRO: ACCESS-PART 2 ...creating advanced queries, custom forms, multi-page forms, custom reports, integrating, pivot tables, pivot charts, and labels. Requires strong introductory Access skills.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-103-160 MICRO: OUTLOOK ...use email, distribution lists, signatures, attachments, and task lists; schedule appointments and meetings using the calendar; flag, filter, sort, and merge contacts, use message delivery options; archive messages and folders.

10-601-111 HVAC/R ELECTRICAL FUNDAMENTALS ...AC and DC electricity, application of Ohm's Law principles to circuits, electrical power supplies, wiring materials, meter operation, test and troubleshoot switching circuits using industry standard meters and techniques. (Prerequisite: Accepted into HVAC Tech Program; Co-requisites: 10-601-136 HVAC/R Safety, 10-601-133 HVAC/R Refrigeration and A.C. Fundamentals)

10-601-113 HVAC/R REFRIGERATION/AIR CONDITIONING SYSTEMS ...residential/light commercial refrigeration and air conditioning system analysis, start-up, service, repair and troubleshooting using industry standard tools and techniques, evacuation, recovery, charging techniques, Federal certification preparation. (Prequisites: 10-601-121, HVAC/R Heating Fundamentals and 10-601-127, HVAC/R Control Circuits; Co-requisite 10-601-128, HVAC/R Heating Systems)

10-601-114 HVAC/R MECHANICAL SERVICE FUNDAMENTALS ...mechanical math, measurement, mechanical fasteners, concrete fasteners, proper hand tool usage, proper power tool usage, piping supports, black iron pipe threading and assembly, and PVC assembly. (Prerequisites: Accepted into the HVAC/R Technology program; 10-601-136, HVAC/R Safety; Corequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration & AC Fundamentals)

10-601-121 HVAC/R HEATING FUNDAMENTALS ...principles of combustion for fossil fuels, burner set-up, heating system basics, combustion testing for residential systems, and basic mechanical heating service. (Prerequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration & AC Fundamentals; 10-601-114, HVAC/R Mech Service Fund; Corequisites: 10-601-127, HVAC/R Control Circuits; 10-601-137, HVAC Mechanical Service; 10-601-138, HVAC Sheet Metal for HVAC Technicians)

10-601-127 HVAC/R CONTROL CIRCUITS ...relay and HVAC/R electrical control circuit schematic development and analysis; wiring, testing and troubleshooting relay and HVAC/R control circuits; diagnose common HVAC/R system problems by analyzing the control circuit. (Prerequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration & AC Fundamentals; 10-601-114, HVAC/R Mechanical Service Fund; Corequisites: 10-601-121, HVAC/R Heating Fundamentals; 10-601-137, HVAC Mechanical Service; 10-601-138, HVAC Sheet Metal for HVAC Technicians)

10-601-128 HVAC/R HEATING SYSTEMS ...heating controls, heating control circuit basics, analysis of electrical controls for fossil fuel systems, wiring, start-up and service of residential furnaces. (Prerequisites: 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits; Corequisite 10-601-113 HVAC/R Refrigeration and AC Appl.)

Heating, Ventilation, Air Conditioning and Refrigeration Technology

Heating, Ventilation, Air Conditioning and Refrigeration Technology
continued

10-601-131 HVAC/R HEATING SYSTEM APPLICATIONS ...interpreting control system diagrams, control circuit analysis, service and troubleshooting residential and commercial fossil fuel heating systems, rooftops and split systems. (Prerequisite: 10-601-132, HVAC/R Air Conditioning Applications; Corequisite: 10-601-147, HVAC/R Motor Control Application)

10-601-132 HVAC/R AIR CONDITIONING APPLICATIONS ...air properties, air system component application fundamentals, indoor air quality fundamentals, system measurement, adjustment, and troubleshooting to control temperature and humidity in HVAC systems. (Prerequisites: 10-601-113, HVAC/R Refrig/Air Cond Syst; 10-601-128, HVAC/R Heating Systems; Corequisite: 10-601-147, HVAC/R Motor Control Appl)

10-601-133 HVAC/R REFRIGERATION FUNDAMENTALS ...principles of refrigeration and air conditioning, temperature, heat and pressure measurement, system component operation, testing for proper system operation using industry standard tools and practices. (Prerequisite: Accepted into HVAC Tech program; Corequisite: 10-601-136 HVAC/R Safety; 10-601-111 HVAC/R Electrical Fundamentals)

10-601-135 HVAC/R HYDRONIC SYSTEM APPLICATIONS ...hydronic fundamentals, piping systems, pipe sizing, boiler applications, system design fundamentals, system piping installation for conventional systems, radiant systems, and forced air systems, system component operation, selection service and troubleshooting. (Prerequisites: 0-601-131, HVAC/R Heating Systems Applications; 10-601-147, HVAC/R Motor/Control Applications; Corequisite; 10-601-143, HVAC/R Refrigeration Applications)

10-601-136 HVACR SAFETY ...standard first aid, CPR, OSHA 10-hour course as it relates to the HVAC/R field, ladder safety, lockout/tagout electrical procedures, and industry standard power and hand tool safety. (Prerequisites: Accepted into the HVAC/R Program; Corequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration Fundamentals)

10-601-137 HVAC MECHANICAL SERVICE APPLICATIONS ...copper soldering and brazing, oxy-acetylene torch usage for welding and brazing steel, fan and bearing testing, service, and replacement, general replacement service procedures used in the HVAC/R industry. (Prerequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration & AC Fundamentals; 10-601-114, HVAC/R Mechanical Service Fund; Corequisites: 10-601-138, HVAC/R Sheet Metal; 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits)

10-601-138 HVAC SHEET METAL FOR HVAC TECHNICIANS ...sheet metal duct layout and fabrication layout. Students will cut, assemble, and fabricate common sheet metal fittings using industry standard sheet metal tools. (Prerequisites: 10-601-114, HVAC/R Mechanical Service Fundamentals; 10-601-133, HVAC/R Refrigeration & AC Fundamentals; Corequiste: 10-601-137, HVAC Mechanical Service Apps)

10-601-139 HVAC/R BUILDING PLANS AND SPECIFICATIONS ...techniques for reading various types of construction drawings, specifications, and other related documents with an emphasis on the types of drawings and specifications that are commonly used in the HVAC trade (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, HVAC/R Motor Control Applications. Corequisites: 10-601-135, HVAC/R Hydronic System Applications; 10-601-143, HVAC/R Refrigeration Applications)

10-601-141 HVAC/R SYSTEMS SERVICE ...analyze, set up, and troubleshoot three-phase motor starting systems, damper actuators, and economizers; advanced service and troubleshooting of commercial HVAC/R systems including rooftops, and split systems. (Prerequisites: 10-601-143, HVAC/R Refrigeration Applications; 10-601-135, HVAC/R Hydronic System Applications; Corequisite: 10-601-145 HVAC/R Control Systems Applications)

10-601-143 HVAC/R REFRIGERATION APPLICATIONS ...refrigeration system piping, load calculation, sizing, and component selection; service, troubleshoot and repair commercial refrigeration systems including walk-in coolers/freezers, reach-in coolers/freezers and ice machines. (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, HVAC/R Motor Control Applications; Corequisite: 10-601-135 Hydronic System Applications)

10-601-145 HVAC/R CONTROL SYSTEM APPLICATIONS ...HVAC/R electric, electronic, pneumatic, and computerized control systems for hydronic and air systems. Control application fundamentals, system wiring, start-up and troubleshooting. (Prerequisites: 10-601-135, HVAC/R Hydronic System Applications; 10-601-143, HVAC/R Refrigeration Applications; Corequisite: 10-601-141, HVAC/R System Service)

10-601-147 HVAC/R MOTOR CONTROL APPLICATIONS ...analyze and troubleshoot single-phase AC induction motors and motor starting components used in the HVAC/R industry with an emphasis on refrigeration/air conditioning compressor motors and components. (Prerequisites: 10-601-113, HVAC/R Refrig/Air Cond Syst; 10-601-128, HVAC/R Heating Systems; Corequisite: 10-601-132, HVAC/R Air Conditioning Applications)

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Hotel and Restaurant Management
Program Code 101092
Associate Degree

Offered at the Green Bay and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Hotel and Restaurant Management prepares students for a variety of mid-management positions in lodging operations, food service operations, and tourism services. The program is grounded in experiential learning and involves extensive internship requirements.

Program Outcomes
- Develop a personal career plan in the hospitality industry.
- Maximize profits in the lodging and food service industry.
- Plan a conference plan or special event.
- Manage cleaning and sanitation operations in the food service and lodging industry.
- Maximize facility productivity.
- Understand preventive maintenance and equipment service.
- Manage quality customer service systems.
- Apply product presentation principles in the hospitality industry.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Tourism is Wisconsin's fastest-growing industry and there are many interesting and challenging opportunities for relocating to work throughout Wisconsin, the Midwest, and the United States.

A graduate of this program will have the potential for employment in the following areas:

Front Office Manager: coordinates the reception and control center for servicing guests, directs and supervises front office staff, and maximizes room revenue through room inventory control.

Event Service Manager: coordinates activities of staff and personnel to make arrangements for group meetings and events.

Food Service Manager: coordinates food service activities of a hotel/restaurant or similar establishment, plans food service activities, schedules employees, oversees service, and controls costs.

Executive Housekeeper: supervises housekeeping employees, trains new hires, requisitions supplies, controls inventory, and inspects personnel work assignments.

Sales Manager: plans and administers sales programs to generate sales in a hotel or tourism organization, organizes prospect files, plans and prepares advertising and promotional materials, and arranges for publicity.

With additional education and/or work experience, graduates may find other opportunities for employment.
- General Manager
- Marketing Director
- Restaurant Manager
- Catering Manager

The following certificates/technical diplomas may be applied toward this program:
901095, Hotel and Restaurant Management

Curriculum
The Hotel and Restaurant Management Associate Degree is a two-year program. Upon graduation, students will have completed 66 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-102-158	Business-Introduction	3
10-103-121	Micro: Word-Intro	1
10-101-190	Accounting-QuickBooks	1
10-103-131	Micro: Excel-Intro	1
10-109-114	Hotel Management	3
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	15

SECOND SEMESTER
Catalog No.	Description	Credits
10-104-101	Selling Principles	3
10-104-191	Customer Service	3
10-109-126	Hospitality Finance	3
10-801-198	Speech	3
10-809-195	Economics	3
	SEMESTER TOTAL	15

THIRD SEMESTER
Catalog No.	Description	Credits
10-102-100	Bus and Info Tech Occup Prep	1
10-102-160	Global Business Mgmt	3
10-104-110	Marketing Principles	3
10-104-119	Social Media Marketing	3
10-109-127	Hospitality Facilities Mgmt	3
10-145-177	Entrepreneurship	3
	OR	
10-196-145	Workplace Innovation	3
10-809-103	Think Critically & Creatively	3
	SEMESTER TOTAL	19

FOURTH SEMESTER
Catalog No.	Description	Credits
10-102-150	Business Law & Ethics	3
10-104-125	Event Marketing	3
10-109-168	Restaurant Management	3
10-109-199	Hosp Tour Intern Practicum	2
	OR	
10-109-197	Hosp Tour Field Research	2
10-809-172	Race Ethnic & Diversity	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	66

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues.

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global marketing, and global supply chain.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-119 SOCIAL MEDIA MARKETING ...understand the social media revolution! This course will provide students with the practical knowledge and insights needed to successfully plan, implement, manage and measure social media marketing efforts. (Prerequisite: 10-104-110, Marketing Principles)

10-104-125 EVENT MARKETING...planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-109-114 HOTEL MANAGEMENT ...lodging classification, ownership/affiliation, hotel/front office organization, equipment, reservations, registration, guest services, guest accounting, credit monitoring, check-out/settlement, night audit, management functions, room statistics, yield management, staffing.

10-109-126 HOSPITALITY FINANCE ...purchasing/receiving controls, storing/issuing controls, production controls, monitoring activities, sales controls, beverage controls, labor controls.

10-109-127 HOSPITALITY FACILITIES MGMT ...staffing housekeeping operations, facilities safety and security, cleaning routines, material selection, laundry operations, controlling costs in housekeeping and maintenance departments, facility systems.

10-109-168 RESTAURANT MANAGEMENT ...food/beverage industry, product classifications, responsible service; bar/kitchen equipment/organization; maintaining clean/sanitary facilities; staffing, training, supervising food/beverage employees; promotions planning; budgeting/cost controls of food/beverage operations.

10-109-197 HOSPITALITY/TOURISM FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-109-199 HOSPITALITY/TOURISM INTERN PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-145-177 ENTREPRENEURSHIP ...entrepreneurship, success and failure, getting started: sources of capital, location, layout, and legal forms of organization, managing and operating, planning and organizing, directing and monitoring performance, marketing strategy, and administration.

10-196-145 WORKPLACE INNOVATION ...use of inventive thinking techniques and innovative methods to improve work processes in multiple workplace environments; research and analyze the use of technology in businesses to promote innovation in the workplace; develop an innovative, entrepreneurial, and entrepreneurial mindset.

Human Services Associate
Program Code 105203
Associate Degree

A Northcentral Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Northcentral Technical College.

Program Description

The Human Services Associate program is designed to offer opportunities to pursue special interests, such as working with youth, the elderly, corrections clients or providing services to the disabled.

Program Outcomes

The degree prepares students for entry-level positions in a variety of human service agencies. Students will acquire skills needed to work with individuals, groups, and communities and learn to work with people of diverse racial, ethnic, and cultural backgrounds.

Requirements for Program Entry

- A paper application can be requested by emailing admissions@ntc.edu or calling 715.675.3331, Ext. 5860. Online applications are available at www.ntc.edu.
- OPTIONAL: High school transcripts are not required for acceptance to this program, but may be used to show proof of prerequisites. High school transcripts may also contain ACT or Accuplacer scores taken while still in high school (may meet testing requirements if taken within the last 5 years).
- If applicable, include a copy of college transcripts.
- Background Information Disclosure form. A copy of the BID form can be obtained at the following address: http://dhs.wisconsin.gov/forms/F8/F82064.pdf. Note you will submit this free form with your application.
- Provide proof of one of the following: Associate or bachelor's degree, a copy of ACT or Accuplacer test scores Reading Comprehension: Accuplacer: 80, ACT: 18; Arithmetic: Accuplacer: 47, ACT: 18; Sentence Skills: Accuplacer: 86, ACT: 18. If you score below requirements on any portion of the ACT or Accuplacer, you will need to complete Remediation with NTC's Learning Center or a similar service at another college. Questions regarding Remediation and how to complete can be directed to admissions@ntc.edu or 715.675.3331, Ext. 5860.
- If you have an outstanding balance at NTC you are required to pay it in full prior to submitting an application. All application materials will be returned to you if the outstanding balance is not paid in full at the time of application.
- If information indicates that you have been convicted of a crime or have charges pending, you must speak with a program faculty member at Northcentral Technical College.

Employment Potential

Potential Occupations include: Social Services, Community Corrections, Youth Services, Hospitals, Nursing Facilities, Group Homes, Alcohol, Tobacco, and Other Drug Abuse Agencies, Crisis Intervention Centers, Programs for the Aging.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Note

- Health care facilities participating in field experiences require an official criminal background check in compliance with Wisconsin Statutes 1998 Caregiver Law.
- Admitted students may be invited to attend the Human Services program orientation; attendance is strongly recommended.
- Field Experiences are required as part of the program. These may be unpaid. Please work with your program faculty to establish Field Experience I & II sites.
- Health care facilities participating in field experiences require students to complete a health history with examination and recommendation from a physical including documentation regarding immunity status for rubella, rubeola, (measles), varicella (chickenpox), and mumps prior to the start of field experiences. Also, a negative PPD (TB skin test) must be documented within the 3 months prior to beginning any field experiences. If a positive PD is noted, the student will need to provide documentation and certification by a licensed physician that he/she is not a health risk to vulnerable third parties.
- Students will be required to cover any expenses related to the field experiences.
- Admission and Notification Priority: Applicants who meet the admission requirements will be admitted in order of completed application dates. Accepted students will be given the option to defer their start date two consecutive times. Should a candidate accept an admittance date and then withdraw less than one month before the semester begins, the candidate will need to reapply. **PLEASE NOTE:** Applicants from the NWTC District will be admitted in Fall semester only.
- For more information, please call Toll Free: 1.888.NTC.7144

Curriculum

The Human Services Associate-Associate Degree is a two-year, four-semester collaborative program between Northcentral Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus and will take part in online distance learning courses available through NTC. Upon graduation, a student will have completed 70 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
* 10-520-101	Introduction to Human Services	3
10-550-170	Understanding Substance Abuse	3
10-550-175	Personal and Professional Dev	1
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16

SECOND SEMESTER

* 10-520-106	Human Sexuality	3
* 10-520-109	Child and Adolescent Behavior	3
10-550-176	Ethical AODA Case/Record Mgmt	3
10-550-178	Intro to Counseling Theory	3
* 10-801-195	Written Communication	3
10-809-159	Abnormal Psychology	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-520-121	Field Experience I	3
10-544-201	Intro to Gerontology	3
10-550-177	AODA Assessment and Diagnosis	3
10-550-179	Methods of AODA Counseling	3
10-809-188	Developmental Psychology	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-520-122	Field Experience II	3
10-550-172	Group Facilitation	3
10-550-174	Overview of Mental Disorders OR	3
10-550-173	Psychopharmacology	3
10-809-172	Race Ethnic & Diversity	3
* 10-809-174	Social Problems	3
* 10-520-119	Advanced Counseling Skills	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	70

CURRICULUM NOTE

*Courses taught at NWTC via distance learning from Northcentral Technical College.

Students seeking AODA licensure must complete 90-550-1, AODA Certificate.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-520-101 INTRODUCTION TO HUMAN SERVICES ...this course is designed to give the student an overview of the human service field. Students will learn about the various types of human service agencies and occupations available in the field, and the qualities of the personnel in those fields. Students will get first hand experience with at least one local human service agency. (Prerequisites: Acceptance in Human Services program or certificate)

10-520-106 HUMAN SEXUALITY ...an overview of topics related to human sexuality. Using a biopsychosocial perspective, students will evaluate human sexual behavior as an interaction of physiological, psychological and sociocultural processes. Students will review recent scientific advances in areas such as genetics, endocrinology, linguistics, information processing, and social psychology as they relate to our current understanding of human sexual practices. Due to the mature subject matter discussed and the candid nature of this course, it is limited to the mature student who is at least 18 years of age. There is no challenge test for this course.

10-520-109 CHILD AND ADOLESCENT BEHAVIOR ...a three-part course examining issues such as child development, juvenile delinquency and mental health issues. The course will explore healthy and appropriate child development and issues such as abuse and neglect, which alter development. Juvenile delinquency will explore common behavioral concerns of adolescents and what treatment options exist. Prevalent mental health issues of children and adolescents will be explored as well as treatment including common medications. (Prerequisite: 10-809-188 Development Psychology)

10-520-119 ADVANCED COUNSELING SKILLS ...an extension of skills already learned in classes such as Introduction to Counseling, Behavior Assessment, and Abnormal Psychology. Students will learn about the skills and techniques used in cognitive-behavioral therapy, and will learn how to apply specific therapies to specific needs and mental health diagnoses. Students will also learn about different theoretical orientations to mental health problems with a special emphasis on the contrast between cognitive-behavioral and psychoanalytic theories. Crisis intervention techniques, skills and theory will be discussed in some depth with an emphasis on the helper's role in providing those services; as well as the helper's potential to fall victim to the effects of such experience. Modern film will be used to provide examples as well as material for discussion during this course.

10-520-121 FIELD EXPERIENCE I ...designed to introduce the student to the field of Human Services by providing the student with actual work experience in a human service agency. Students will provide a minimum of 144 hours of service to the agency of their choice, with direct supervision provided the the agency supervisor. The student will work with the agency to define the individual learning objectives to be obtained during the course of the internship. The goal is to facilitate the student's transition into the work world. (Prerequisites: 10-520-102, Ethics in Human Services; 10-520-115, Intro to Counseling; 10-520-108, Methods of Social Casework)

10-520-122 FIELD EXPERIENCE II ...introduces the field of Human Services by providing the student with actual work experience in a human service agency. Students will work a minimum of 144 hours of service to an agency. (Prerequisite: Field Experience I)

10-544-201 INTRO TO GERONTOLOGY ...a general overview of the field of aging. Topics include demographic, biological, psychological, and social aspects of the aging process.

10-550-170 UNDERSTANDING SUBSTANCE ABUSE ...a holistic approach including epidemiology, etiology, and definitions; prevention and treatment, social and health care institutions and resource agencies, and ethics and legal issues in the helping profession with a focus on self-attitudes, values, and goals.

10-550-172 GROUP FACILITATION ...learners are introduced to group counseling techniques such as facilitating the process of forming a group, determining group type, purpose, size, leadership, establishing goals and clarifying group rules. (Prerequisite: 10-550-179, Methods of AODA Counseling)

10-550-173 PSYCHOPHARMACOLOGY ...learners will be introduced to the basic concepts of psychopharmacology and the function of the organs and systems of the human body and brain.

10-550-174 OVERVIEW OF MENTAL DISORDERS ..learners will be introduced to the symtomology and etiology and classification of psychiatric disorders and treatment.

10-550-175 PERSONAL AND PROFESSIONAL DEVELOPMENT ...this course will introduce the personal and professional qualities and responsibilities AODA counselors should incorporate into their practice. Learners will clarify personal values and beliefs while examining their strengths and weaknesses. The course content will include ethical issues surrounding substance abuse counseling.

10-550-176 ETHICAL AODA CASE AND RECORD MANAGEMENT ...this course will provide the information necessary to provide ethical case management, coordinating integrative services for AODA clients, and the accurate management of treatment records.

10-550-177 AODA ASSESSMENT AND DIAGNOSIS ...learners develop a working knowledge of gathering and interpreting information used in forming diagnoses based on the criteria in the DSM-IV TR. Learners will explore various diagnostic tools and determine the level of care utilizing the Wisconsin UPC. (Prerequisite: 10-550-170, Understanding Substance Abuse)

10-550-178 INTRO TO COUNSELING THEORY ...learners are introduced to the basic counseling skills and will begin to examine the counseling theories utilized in the human services professions.

10-550-179 METHODS OF AODA COUNSELING ...learners are introduced to a number of counseling theories and techniques that can be utilized in the human services profession. The theories will be explored in relation to substance abuse counseling. (Prerequisite: 10-550-178, Intro to Counseling Theory)

10-809-174 SOCIAL PROBLEMS ...explores the causes of and possible solutions to selected social problems, such as inequality, crime and deviance, and poverty. Students will examine the interrelationship of social problems and their roots in fundamental societal institutions.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Individualized Technical Studies
Program Code 108251
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Individualized Technical Studies program is intended for currently employed individuals who have a specific career objective that cannot be met by existing degree programs. By combining state board approved courses from two or more major areas of study, the student, along with an occupational advisor, designs an occupational degree program into a unique associate degree.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Completion of all recommended activities to address math and reading skills deficiencies.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
With the growth of employment opportunities in small and mid-sized firms, employers increasingly seek workers able to take on multiple tasks and roles that cut across traditional occupational categories. With the introduction of new kinds of technologies and work processes, occupational duties and the competencies needed in the workplace are constantly in flux.

To be productive and effective in today's workplace, workers may need skills and knowledge drawn from a variety of traditional disciplines.

This program allows students to design a customized instructional program leading to an Associate of Applied Science Degree in Technical Studies. The individualized program will have a specific occupational focus designed by the student in consultation with an occupational mentor, district faculty, and career advising staff.

The program requires the identification of an occupation advisor who will assist the student in specifying skill competencies and occupational outcomes for a specific occupational area.

Individualized Technical Studies Degree has two objectives:
- Provide flexibility in programming in order to meet the educational needs of individuals based on their particular career goals.
- Emphasize an individual's career goals that cannot be achieved through enrollment in any single instructional program currently available at the college.

As part of the educational process, each student is required to complete a personal program portfolio outlining his or her career objectives and the courses required to meet those objectives. This student portfolio, together with a completed application for admission, becomes part of the review process used by the NWTC Individualized Technical Studies committee to admit the student for a customized technical studies program.

Curriculum
Total credits for the Individualized Technical Studies program will vary with a minimum of 60 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-123	Math w Business Apps	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
10-999-939	Technical Studies-Occupational	39
	TOTAL CREDITS	60

Explore the possibility of Individual Technical Studies in areas such as:

Childcare Administration
Students who complete the 18-credit Child Care Administration Certificate may wish to combine those classes with other classes in the Early Childhood or Supervision associate degree programs for an Individual Technical Studies-Child Care Administration Degree. Courses can be chosen to create a customized curriculum specific to the needs of the individual, with an emphasis on Administration, Special Needs, Infant/Toddler or other areas.

Entrepreneurship
In today's world, there is increasing desire among people of all ages to explore, develop, start and run their own businesses. But the knowledge, skills and abilities to start and successfully operate these businesses have never required the wearing of so many hats - and to wear them well. Though the rewards are great, the risks are equally as great, thereby requiring that today's entrepreneurs be more sophisticated and balanced in their planning and preparation. NWTC has carefully considered the needs of an entrepreneur, and have created four distinct Entrepreneurship Certificate tracks to consider. By pairing these certificates with general studies courses, you can create an Individualized Technical Studies Degree in Entrepreneurship. For more information about these degrees and other exciting opportunities, please call (920) 498-5431 or (920) 498-6872.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-801-136 ENGLISH COMPOSITION 1
...learners develop knowledge/skills in planning, organizing, writing, editing. Students will also analyze audience/purpose, use elements of research, format documents using standard guidelines, and develop critical reading skills.

10-801-198 SPEECH ...fundamentals of effective oral presentation to small and large groups: topic selection, audience analysis, methods of organization, research, structuring evidence and support, delivery techniques, and the listening process.

10-804-123 MATH W BUSINESS APPS
...real numbers; basic operations; proportions/ one variable; percents, simple/compound interest; annuity; apply math concepts to purchasing/buying process, selling process; and basic statistics with business/consumer applications. (Prerequisite: Recommendation: Accuplacer Arithmetic = 65).

10-809-172 RACE ETHNIC & DIVERSITY
...basic American values of justice and equality by teaching vocabulary, history of immigration/ conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-809-196 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings.

Individualized Technical Studies-Journeyworker

Program Code 104995

Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Individualized Technical Studies-Journeyworker is designed for journeyworkers from various trades who are interested in continuing their education and earning a degree customized to their career interests. Thirty-nine credits are granted toward the degree based upon completion of a Wisconsin Journey Certificate that includes 400 hours or more of instruction. With a college advisor, the journeyworker identifies the knowledge and skills required to achieve specific career goals. Existing NWTC courses become components of the journeyworker's program of study. At a time when the workplace is continuously changing with advancing technology and flexible organizational practices, new and nontraditional skills are required of the successful worker.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Completion of all recommended activities to address math and reading skills deficiencies.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

The individualized nature of this program allows students to take advantage of the skills they have acquired in the apprenticeship program, enhance those skills with coursework from an area of interest, and prepare for a wide variety of workplace opportunities.

Note

Advanced standing will be granted for the 39 credits with the completion of the apprenticeship if it includes a minimum of 400 hours of paid related training (day school).

Curriculum

Upon graduation from the Individualized Technical Studies-Journeyworker program, a student will have completed 60 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-801-136	English Composition 1	3
10-801-197	Technical Reporting	3
10-804-118	Interm Algebra w Apps	4
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
10-999-939	Technical Studies-Occupational	39
	TOTAL CREDITS	61

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-801-136 ENGLISH COMPOSITION 1 ...learners develop knowledge/skills in planning, organizing, writing, editing. Students will also analyze audience/purpose, use elements of research, format documents using standard guidelines, and develop critical reading skills.

10-801-197 TECHNICAL REPORTING ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 10-801-136, English Composition 1 OR 10-801-195, Written Communication)

10-804-118 INTERM ALGEBRA WITH APPLICATIONS ...algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. (Prerequisites: Recommendation: Accuplacer Algebra Test = 61 OR Accuplacer (College Level Math) = 40 OR Completion of 10-804-110, Elementary Algebra w Apps OR 10-804-120, Math-Tech Algebra with grade "C" or better).

10-809-172 RACE ETHNIC & DIVERSITY ...basic American values of justice and equality by teaching vocabulary, history of immigration/ conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-809-196 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings.

Industrial Mechanic
Program Code 314622
Technical Diploma
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Industrial Mechanic prepares students to evaluate machine performance, identify trouble areas, and repair systems.

Program Outcomes
- Interpret the elements of mechanics.
- Use measuring devices.
- Use hand, stationary, and portable power tools.
- Prepare mounting bases for machine installation.
- Identify and use threaded fasteners and various locking and holding devices.
- Identify types of structural steel shapes.
- Apply safety requirements to rigging an object.
- Classify valves used in a piping system.
- Describe the difference between machine, carbon, and alloy steels.
- Identify and maintain types of bearings.
- Apply lubricants.
- Demonstrate parallel shaft alignment.
- Maintain chain drive component systems.
- Identify types of gears.
- Identify types of couplings.
- Replace and test electrical motors.
- Identify pipe systems, demonstrate correct pipe assembly and installation procedures.
- Maintain and repair hydraulic systems.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and industrial education.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34, Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment as:

Industrial or Maintenance Mechanic: installs, repairs, and maintains the operating condition of industrial production and processing machinery.

Machine Adjuster: adjusts and maintains machinery for optimum manufacturing production.

Machine Assembler: assembles machines, equipment, and their subassemblies following blueprints and assembly procedures.

Machinery Erector: erects and tests machinery and heavy equipment, replaces defective parts of a machine, adjusts clearances and alignment of moving parts, and dismantles machinery and equipment for shipment to the installation site.

Machinery Repairer: inspects, maintains, repairs, and adjusts machinery and equipment in order to ensure its proper operation in the various industries.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Lead Mechanic
- Maintenance Supervisor
- Master Mechanic
- Millwright

Note
Students may expand their employment opportunities and earn an additional credential, the Industrial Maintenance Certificate (Cert 904621), by taking the courses listed below in combination with the Industrial Mechanic Technical Diploma. The one-credit courses are offered at the NWTC Manufacturing Technology Center in an instructor-assisted, individualized skills training format. Courses may be taken before, during and/or after completion of the Industrial Mechanic Technical Diploma. For more information, please call the Trades & Engineering Technologies Department, (920) 498-5461.

10-664-100 Automation 1: Control Logic
10-664-101 Automation 2: Motor Control
10-664-102 Automation 3: PLC
10-664-103 Automation 4: PLC
10-664-104 Automation 5: PLC
10-664-105 Automation 6: PLC
10-620-140 Machine Wiring and Safety
10-620-161 Power Electricity 1: Motors
10-620-159 Power Electronics 3: Drives Total
Certificate Credits: 9

Curriculum
The Industrial Mechanic Technical Diploma is a one-year, two-semester program.
Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-420-314	Machine Shop-Basic	4
31-421-355	Blueprint Rdg/Sket-Indus	2
31-462-305	Mechanic 1-Industrial	5
31-462-306	Mechanic 2-Industrial	5
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
31-442-365	Welding-Industrial	3
31-462-307	Mechanic 3-Industrial	5
31-462-308	Mechanic 4-Industrial	5
31-462-356	Hydraulics-Industrial	2
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	16
	TOTAL CREDITS	34

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-420-314 MACHINE SHOP-BASIC
...lathe/drilling/milling machines, shapers, grinding machines, tool sharpening, bench work layout, measuring, inspection techniques, and machine part repair/fabrication.

31-421-355 BLUEPRINT READING/ SKETCHING-INDUSTRIAL MECHANIC
...orthographic/ isometric sketching, multiview print reading, dimensioning and tolerancing, section/auxiliary views, weld symbols, piping/ hydraulic prints, and electric motor prints.

31-442-365 WELDING-INDUSTRIAL
...oxyacetylene process, oxyacetylene welding, brazing, cutting, metal arc welding, gas metal arc welding, and gas tungsten arc welding (ferrous and non-ferrous metals).

31-462-305 MECHANIC 1-INDUSTRIAL
...basic elements of mechanics: precision measurements, safe use of hand and power tools, industrial lift truck operation, sheet metal layout and fabrication, machine mounting bases mechanical fasteners.

31-462-306 MECHANIC 2-INDUSTRIAL
...structural steel nomenclature and installation, safe and proper use of scaffolding, rigging and weight estimation, maintenance of hand and cutting tools, speciality tool fabrication, piping systems, and tubing systems. (Corequisite: 31-462-305, Mechanic 1 Industrial)

31-462-307 MECHANIC 3-INDUSTRIAL
...basic metallurgy, functions of gaskets, packing and mechanical seals, lubrication properties and systems, bearing types and functions, electrical knowledge and safety. (Prerequisite: 31-462-306, Mechanic 2-Industrial)

31-462-308 MECHANIC 4-INDUSTRIAL
...belt drives, chain drives, power transmission couplings, gear drives, preventative maintenance. (Corequisite: 31-462-307, Mechanic 3-Industrial)

31-462-356 HYDRAULICS-INDUSTRIAL
...hydraulic/pneumatic system maintenance, hydraulic pump repair, motors, controls, actuators, and pneumatic components.

Instructional Assistant
Program Code 105222
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Instructional Assistant Degree is an Associate of Applied Science Degree, which prepares qualified individuals to work directly with students under the supervision of a licensed teacher. The duties include assisting children with math, reading, and writing assignments as well as handling classroom management, supporting students with special needs, clerical and other tasks related to instruction. This program meets Title I and No Child Left Behind paraeducator requirements.

Duties may also include monitoring student activities, assisting with reading or math, correcting papers, tutoring, one-on-one activities and small group facilitation. In addition, instructional assistants work on classroom displays, assist children with computers and media, provide educational and personal hygiene support to meet individual student needs, and supervise various classroom and other school events. Instructional Assistants may be hired to provide instructional services to students from pre-kindergarten through age 21, however, the focus of this program is on preparing graduates to work primarily in elementary and middle level schools.

Program Outcomes
- Support all learning based on knowledge of subject matter.
- Identify developmentally appropriate child/adolescent physical, social/emotional, intellectual, and language characteristics and their developmental and environmental impact on learning.
- Adapt instruction to meet the diverse needs of all learners.
- Utilize a variety of instructional strategies, media, and technology to foster the development of critical thinking and problem solving.
- Use proactive classroom management techniques to promote a positive class climate, intrinsic motivation, and optimal learning.
- Demonstrate effective written and verbal communication in working collaboratively within the school setting and interactions with students and families.
- Assist in planning and implementing instructional strategies that reflect the learning cycle.
- Utilize informal assessment strategies to collect data for the support of student learning.
- Incorporate the reflective process to promote student learning and professional growth.
- Assume professional responsibility for ethical, moral, and legal policies and procedures.
- Provide for health and safety needs of students.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Demonstrated proficiency in basic skills through a course placement assessment.
- It is necessary to show good health as evidenced by a medical examination within one year prior to beginning practicum classes.
- Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 55; Sentence Skills: 73; Algebra: NA. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (2009 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry and annually for the remainder of the program. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate of this program will have the potential for employment as an instructional assistant or educational paraprofessional in schools from the pre-kindergarten through high school level. Instructional Assistants work with children in preschools, elementary schools, middle schools, and high schools. Instructional assistants work with children with special needs.

Most job opportunities in this field coincide with the public school system with regard to workdays, holidays, summers and many positions are part-time.

Graduates Work As: Teacher assistants, instructional assistants, paraeducators, paraprofessionals, specialized aides in reading, math, computers, or special education, and autism therapists.

Typical Activities Include: Preparing classroom displays, using computers, supervising classroom and playground activities, giving tests, monitoring students, reading and telling stories, assisting with small and large group activities, managing student behavior, supporting individual needs of all students, following teacher lesson plans and supporting individual personal hygiene needs.

The following certificates/technical diplomas may be applied toward this program:
- 905222, Intro to Instructional Assistant Careers
- 905221, Supporting Children's Learning
- 905224, Special Education

For complete program information,
go to: www.nwtc.edu

Curriculum

The Instructional Assistant Associate Degree is a two-year program. Upon graduation, a student will have completed 66 credits. Courses are offered online, and may be taken in any order as long as prerequisites are met. Below is a suggested timeline.

FIRST SEMESTER

Catalog No.	Description	Credits
10-522-103	IA: Intro to Educ Practices	3
10-522-104	IA: Technology/Media Rsrces	3
10-801-198	Speech	3
10-809-188	Developmental Psychology	3
10-809-195	Economics	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-522-102	IA: Techniques/Readg/Lang Art	3
10-522-106	IA: Child & Adolescent Devel	3
10-522-107	IA: Overview of Special Ed	3
10-522-111	IA: Guiding & Mnging Behavior	3
* 10-522-129	IA: Practicum 1	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-522-101	IA: Teamwork in School Setting	3
10-522-118	IA: Techniques for Math	3
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
	Elective	3
	SEMESTER TOTAL	15

FOURTH SEMESTER

10-522-120	IA: Techniques for Science	3
10-522-122	IA: Adv Readg/Language Arts	3
10-522-124	IA: Support Students w Disab	3
* 10-522-131	IA: Practicum 2	3
10-522-132	IA: Positive Classrm Mgmt Tech	3
** 10-804-107	College Mathematics	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	66

CURRICULUM NOTE

* Required 108 hours in classroom under supervision of K-12 teacher. NWTC Faculty arranges practicum settings for/with students. Students are required to achieve a grade of "C" or higher in the practicum courses to continue in or graduate from this program.
Completed criminal record check and medical exam are required prior to starting the practicums.

** This course does not articulate to a four year college. Seek assistance from counselor for math options.
Completion of a Wisconsin Technical Skills Attainment (TSA) portfolio is required to graduate from this program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-522-101 IA: TEAMWORK IN SCHOOL SETTINGS ...working together is paramount in helping all children learn. This introductory course will define the role and responsibilities of the instructional assistant. School and educational policies, ethical and moral responsibilities, group dynamics and Wisconsin tribal rights will also be explored. Emphasis placed on collaborating with a team comprised of diverse members. Service Learning hours will be required for this course.

10-522-102 IA: TECHNIQUES/READING/LANGUAGE ARTS ...focus on best practices in working with children in their development of reading and language arts as well as the roles of the teacher and the instructional assistant. The student will gain an understanding of how to work with all children and reinforce instruction individually and in groups through questioning, listening and guiding, and scaffolding techniques. Current classroom materials plus enrichment and support activities will be examined and created.

10-522-103 IA: INTRODUCTION TO EDUCATIONAL PRACTICES ...fundamentals of teaching methodologies, history of education, issues in trends, learning styles, instructional cycle, characteristics of diverse classroom, questioning techniques and assessment practices.

10-522-104 IA: TECHNOLOGY/MEDIA RESOURCES ...develop knowledge and skills in the area of media and computer resources as it relates to the instructional assistant. Students will gain experience creating and using web tools including electronic portfolios.

10-522-106 IA: CHILD & ADOLESCENT DEVELOPMENT ...growth and development birth through adolescence. Acquaints the learner with the fundamental tasks of physical, motor, perceptual, cognitive social/emotional and language development.

10-522-107 IA: OVERVIEW OF SPECIAL EDUCATION ...overview of the special education law; special education classifications and associated causes and characteristics will be explored as well as state and federal qualification criteria will be examined. Societal responses to students with disabilities as well as the impact of a student with special needs on family dynamics will also be covered in this course.

10-522-111 IA: GUIDING & MANAGING BEHAVIOR ...proactive, preventive classroom management, research-based concepts and strategies used to prevent behavior problems, creating positive classroom climate, building student relationships, enhancing motivation, responding to inappropriate behavior will be emphasized.

10-522-118 IA: TECHNIQUES FOR MATH ...techniques for the Instructional Assistant in assisting the classroom teacher in group and individual tutoring activities in math; current practice including manipulatives, problem solving and assessment will be covered within the framework of state and national standards.

10-522-120 IA: TECHNIQUES FOR SCIENCE ...introduction to the content and processes of science. Strategies of teaching science will be studied and practiced and will prepare you in assisting the classroom teacher in group and individual activities in science. Current science processes, strategies, procedures, assessment options and factors affecting science learning will be explored.

10-522-122 IA: ADVANCED READING/LANGUAGE ARTS ...explore how to integrate reading and writing within the content areas. Students will also gain the knowledge and skills needed to support and encourage children as independent, strategic readers as well as techniqes to support children through the writing process. Children's and Young Adult literature, poetry and personal writing will be explored and integrated throughout this course.

10-522-124 IA: SUPPORT STUDENTS WITH DISABILITIES ...services delivered to students with special education needs, supportive and related services, law, individual educational programs, various instructional formats, and alternative instructional techniques and programs. (Prerequisite: 10-522-107, IA: Overview of Special Education)

10-522-129 IA: PRACTICUM 1 ...introduces the student to a diverse classroom setting at an elementary, middle or high school level. The student will observe children and practice techniques under the guidance of a DPI certified teacher. 108 hours in the classroom under supervision of K-12 teacher.

10-522-131 IA: PRACTICUM 2 ...apply the skills learned in previous program courses in a school setting while under the supervision of a DPI certified teacher. Students support children with special education needs and programming. Job search skills will be addressed and a professional portfolio will be completed. 108 hours in the classroom under supervision of K-12 teacher. (Prerequisite: 10-522-129, IA: Practicum 1)

10-522-132 IA: POSITIVE CLASSROOM MANAGEMENT TECHNIQUES ...examines the impact of issues such as divorce, alcoholism, child abuse, youth suicide, stress, violence and gangs on behavior in the classroom. Conflict resolution techniques and de-escalation strategies and with an emphasis on prevention will also be examined.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Judicial Reporting
Program Code 101061
Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Lakeshore Technical College.

Program Description

You've seen high profile trials with a person keying the testimony into a stenograph machine or read the scrolling captions for the hearing-impaired on your TV screen. The person recording the spoken word at speeds ranging from 180 to 225 words a minute is a judicial reporter. If you're an excellent listener, have strong language and communications skills, and are committed to accuracy and confidentiality, a career in judicial reporting may be a perfect fit for you.

Program Outcomes

- Develop proficiency in machine shorthand using realtime theory.
- Develop a personal dictionary, read, translate, and edit transcripts using CAT (computer-aided transcription) software.
- Produce salable transcripts on a realtime translation system.
- Demonstrate knowledge of proper reporting procedures and responsibilities for freelance and official reporting.
- Demonstrate knowledge of legal and medical concepts and terminology.
- Demonstrate knowledge of the professional reporting organizations and methods of gaining certification as a Registered Professional Reporter.

Requirements for Program Entry

Judicial Reporting is a collaborative program between LTC and NWTC. Application for this program must be completed through LTC.

Employment Potential

A graduate of the program will have potential for employment in the following areas:
- Legislative Reporter
- Official Court Reporter in the Court System
- Freelance Reporter
- Scopist

About Shared Programs

LTC offers its Judicial Reporting program in cooperation with technical colleges across the state. As a judicial reporting student, you'll:
- Attend live, interactive TV classes sent from LTC to NWTC.
- Take general studies classes and labs at your local technical college.

Curriculum

Judicial Reporting is a collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon graduation, a student will have completed 65 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-106-104	Realtime Reporting 1	5
10-106-144	Realtime Reporting Orientation	1
10-106-159	Legal Terminology	1
10-106-184	English for Realtime Reporters	1
10-106-804	Realtime Reporting 1 Lab	1
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-106-105	Realtime Reporting II	5
10-106-158	Realtime Reporting Technology	2
10-106-805	Realtime Reporting II Lab	1
10-801-196	Oral/Interpersonal Comm	3
	OR	
10-801-198	Speech	3
10-809-172	Race Ethnic & Diversity	3
	OR	
10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	17

SUMMER SEMESTER

10-106-108	Realtime Reporting Speed Dev	2
	SEMESTER TOTAL	2

THIRD SEMESTER

10-106-109	Literary I	2
10-106-128	Jury Charge I	2
10-106-156	Testimony I	3
10-106-809	Literary I Lab	1
10-106-828	Jury Charge I Lab	1
10-106-859	Testimony I Lab	1
10-809-195	Economics	3
	OR	
* 10-809-144	Macroeconomics	3
10-804-123	Math w Business Apps	3
	OR	
10-804-107	College Mathematics	3
	OR	
10-806-112	Principles of Sustainability	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-106-111	Literary II	2
10-106-129	Jury Charge II	2
10-106-142	Judicial Reporting Procedures	2
10-106-143	Judicial Reporting Internship	1
10-106-157	Testimony II	3
10-106-171	Medical Reporting/Terminology	2
10-106-811	Literary II Lab	1
10-106-829	Jury Charge II Lab	1
10-106-857	Testimony II Lab	1
	SEMESTER TOTAL	15
	TOTAL CREDITS	65

*Available only at Lakeshore Technical College.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-106-104 REALTIME REPORTING ...prepares learners to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting 1 Lab is required. CONDITION: 101071 Broadcast Captioning or 101061 Judicial Reporting or 321071 Broadcast Captioning or 321061 Judicial Reporting.

10-106-105 REALTIME REPORTING II ...prepares the learner to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet"; apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent registration in Realtime Reporting II Lab is required.

10-106-108 REALTIME REPORTING SPEED DEVELOPMENT ...further develops skills acquired in Realtime Reporting II on literary, jury charge, and testimony material beginning at 120 wpm. Scheduled during the summer term, students must pass two, 3-minute timings at a minimum speed of 110 words per minute.

10-106-109 LITERARY I ...prepares the learner to write literary material at 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary I Lab is required.

10-106-111 LITERARY II ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary II Lab is required.

10-106-128 JURY CHARGE 1 ...prepares the student to write jury charge material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge 1 Lab is required.

10-106-129 JURY CHARGE II ...expands the student's ability to write jury charge material dictated at a minimum speed of 200 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge 2 Lab is required.

10-106-142 JUDICIAL REPORTING PROCEDURES ...introduces the student to reporting procedures for which reporters are responsible in the courtroom, deposition, and real-time reporting environments, including preparing salable transcripts, researching legal citations, and developing professional development plans.

10-106-143 JUDICIAL REPORTING INTERNSHIP ...prepares the student to write machine shorthand verbatim for a minimum of 40 hours of actual writing time in the courtroom, classroom, and deposition environment under the supervision of a working reporter; prepare a 40-page transcript, and summarize the internship experience in a narrative report.

10-106-144 REALTIME REPORTING ORIENTATION ...prepares student to use computer-assisted, real-time transcription software, Windows, e-mail, a steno machine, and a laptop in writing machine shorthand in court reporting and to complete and submit required coursework. CONDITION: 101071 Broadcast Captioning program requirements met or 101061 Judicial Reporting program requirements met.

10-106-156 TESTIMONY I ...prepares the student to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe with a minimum of 95 percent accuracy. Concurrent registration in Testimony I Lab is required.

10-106-157 TESTIMONY II ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR exam. Concurrent registration in Testimony II lab is required.

10-106-158 REALTIME REPORTING TECHNOLOGY ...prepares the student to use CAT (Computer-Assisted Transcription) and real-time software; build personal dictionaries; and read, translate, and edit transcripts. Students are introduced to real-time translation procedures in court, depositions, captioning, and educational environments.

10-106-159 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-106-171 MEDICAL REPORTING & TERMINOLOGY ...prepares the student to write medical terminology in machine shorthand using appropriate medical terminology from material dictated at a minimum speed of 150 wpm for 5 minutes with a minimum of 95 percent accuracy. The student will research medical information, prepare salable transcripts, and submit timings.

10-106-184 ENGLISH FOR REALTIME REPORTERS ...enhances the student's ability to use proper English grammar, spelling, punctuation, capitalization, and vocabulary techniques in the transcription of the spoken word.

10-106-804 REALTIME REPORTING 1 LAB ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms, phrases, words in singular and plural forms, prefixes and suffixes. Concurrent registration in Realtime Reporting 1 is required. Co-requisite: 10106104 Real Time Reporting 1.

10-106-805 REALTIME REPORTING II LAB ...expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffices; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet"; apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory. Concurrent registration in Realtime Reporting II is required.

10-106-809 LITERARY I LAB ...expands the student's ability to write literary material dictated at a speed of 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

10-106-811 LITERARY II LAB ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Literary II is required.

10-106-828 JURY CHARGE I LAB ...prepares the student to write jury charge material dictated at a speed of 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

10-106-829 JURY CHARGE II LAB ...expands the student's ability to write jury charge material at 200 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Jury Charge II is required.

10-106-857 TESTIMONY II LAB ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three, 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR Exam. Concurrent registration in Testimony II is required.

10-106-859 TESTIMONY 1 LAB ...expands the student's ability to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy.

Landscape Horticulture

Program Code 100014
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Landscape Horticulture program prepares a student for employment in the horticulture industry. Instruction will focus on landscape designing, plant installation, maintenance and hardscape skills.

Program Outcomes
- Communicate within the horticulture industry.
- Justify the selection of the appropriate woody plant(s) under the given circumstances for the project at hand.
- Justify the selection of the appropriate herbaceous plant(s) under the given circumstances for the project at hand.
- Execute IPM (Integrated Pest Management).
- Prescribe and execute proper landscape maintenance plans.
- Determine nutritional requirements of turf grasses and ornamentals.
- Analyze soil and its influence on plant life.
- Design and build landscapes.
- Implement a landscape construction design plan.
- Operate a transit.
- Use carpentry hand and power tools.
- Safely operate landscape equipment.
- Operate computer hardware system.
- Develop and deliver a landscape design presentation.
- Use CAD (Computer Aided Design).
- Receive training for Wisconsin Pesticide Certification exam.
- Propagate and grow horticulture plants.
- Use masonry hand and power tools.
- Design and install irrigation equipment.
- Diagnose and treat pest problems on ornamental plants.
- Identify and maintain tropical indoor plants.
- Utilize sustainable practices and biorational controls.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Landscape Horticulture Technician: performs pencil sketching of common ideas, designs landscapes; builds and installs hardscapes and plants; writes cost estimates for labor and materials; performs ground maintenance; safely operates landscape and construction equipment. Has working knowledge of the safe use of pesticides.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Grounds Manager
- Sales Representative
- Garden Center Manager
- Pest Control Specialist
- Garden Center Specialist
- Golf Course Maintenance Assistant
- Lawn Care Equipment Operator
- Turf Technician or Interior Plantscaper

The following certificates/technical diplomas may be applied toward this program:
- 900012, Greenhouse Growers
- 900015, Plant Healthcare Management

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 66; Arithmetic: 72; Sentence Skills: 89. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Curriculum
The Landscape Horticulture Associate Degree is a two-year, four-semester plus one summer program. Upon graduation, students will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-001-110	Horticulture-Intro	3
10-001-158	Plant-Woody Ornamental	3
10-001-159	Flowers-Herbaceous	3
10-606-112	Computer Apps for Technicians	1
10-606-127	Landscape Dsgn Studio Intro	1
10-801-196	Oral/Interpersonal Comm	3
10-809-197	Contemporary Amer Society	3
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-001-122	Fundamentals Plant Nutrition	1
10-001-153	Plant and Soil Science	3
10-001-154	Turf Management	3
10-001-180	Landscape Installation Intro	2
10-606-125	Landscape Design Technology	2
10-804-123	Math w Business Apps	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	17

SUMMER SEMESTER
Catalog No.	Description	Credits
10-001-151	Landscape/Hort Internship	3
	SEMESTER TOTAL	3

THIRD SEMESTER
Catalog No.	Description	Credits
10-001-109	Landscape Installation-Adv OR	2
10-001-108	Plant Propagation	2
10-001-170	Integrated Pest Management	2
10-001-172	Landscape Maintenance	2
10-001-174	Prin of Landscape Design/Graph	3
10-104-191	Customer Service	3
10-801-136	English Composition 1	3
	Elective	1
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
10-001-115	Landscaping-Applied	4
10-001-182	Irrigation OR	2
10-001-140	Plant Diagnostic Skills	2
10-001-184	Landscape Design Studio-Adv OR	3
10-001-130	Plant-Interior	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	68

SUGGESTED ELECTIVES
Golf Course Management, 10-001-150
Spanish 1, 10-802-101
Greenhouse Grower I, 10-001-111
Plant Health Care, 10-001-123
Greenhouse Grower II, 10-001-112
Organic Horticulture/Fruits, Vegs, Herbs, 10-090-105

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-001-108 PLANT PROPAGATION
...plant propagation and production techniques. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-109 LANDSCAPE INSTALLATION-ADVANCED ...builds upon landscape construction methods learned in Introduction to Landscape Installation. Possible projects include mixed material patios, retaining walls, water features, sustainable landscape elements, rain gardens, roof gardens, wooden structures, etc. (Prerequisite: 10-001-180, Landscape Installation-Introduction)

10-001-110 HORTICULTURE-INTRODUCTION ...explore the horticulture industry, plant culture, identification, propagation, physiology, selected aspects of horticulture industry including fruits, vegetables, ornamentals, greenhouse systems, landscape techniques, home gardens, and turf.

10-001-115 LANDSCAPING-APPLIED
...provides the opportunity for the learner to develop the knowledge, skills, processes and understanding of applying the course work learned throughout the two years of the Associate Degree program. (Prerequisites: 10-001-170, Integrated Pest Management: 10-001-172, Landscape Maintenance; 10-001-174, Prin of Landscape Design/Graph)

10-001-122 FUNDAMENTALS OF PLANT NUTRITION...fundamentals of plant nutrition, identification & analysis of the nutritional needs of plants; covers the selection of appropriate materials & application rates & methods. (Prerequisite: 10-001-110, Horticulture-Introduction)

10-001-130 PLANT-INTERIOR
...how to identify indoor tropical plants and blooming plants that are used in interior plantscaping. Includes identification, plant varieties, pests, diseases, and cultural requirements. Also designing with houseplants. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-140 PLANT DIAGNOSTIC SKILLS
...science of making proper diagnoses of plant insects and disease problems and appropriate control strategies. Holistic diagnoses and sustainable methods will be emphasized. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-151 LANDSCAPE/HORTICULTURE INTERNSHIP ...job opportunities in the field, applying scholastic knowledge to practical applications, and cooperation with an employer. (Prerequisites: Accepted to the Landscape Horticulture Program; 10-001-158, Plant-Woody Ornamental; 10-001-159, Flowers-Herbaceous ; 10-001-122, Fundamentals Plant Nutrition; 10-001-153, Plant and Soil Science; 10-001-154, Turf Management; 10-001-180, Landscape Installation Intro)

10-001-153 PLANT AND SOIL SCIENCE
...addresses the unique interactions of healthy plants & soils; examines the physical, chemical, organic & biological characteristics of soils and how they impact the structure & functions of plants. (Prerequisite: 10-001-110, Intro Horticulture)

10-001-154 NATURAL TURF MANAGEMENT ...identification of turf grasses; course will examine natural low-maintenance turf, residential lawns and high intensity applications (i.e., golf courses, athletic fields). (Prerequisite: 10-001-110, Intro Horticulture)

10-001-158 PLANT-WOODY ORNAMENTAL
...physiology, culture, identification, and use of primarily temperate woody plant materials appropriate for landscapes in northeastern Wisconsin. (Corequisite: 10-001-110, Horticulture-Intro)

10-001-159 FLOWERS-HERBACEOUS
...annuals/perennials/roses; using flowers/foliage effectively in the landscape; care of each flower emphasizing selection/tips to best utilize each flower; groundcover/vines included. (Corequisite: 10-001-110, Horticulture-Intro)

10-001-170 INTEGRATED PEST MANAGEMENT...various methods to combat plant pests in an environmentally responsible manner; using biorational techniques and strategies. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-172 LANDSCAPE MAINTENANCE
...identifying problems and cultural challenges in the landscape; pruning techniques, insect/disease problems, weed identification; soil fertility; resolve situations in the field. (Prerequisites: 10-001-110, Horticulture-Introduction; 10-001-153, Plant and Soil Science; 10-001-122, Fundamentals of Plant Nutrition)

10-001-174 PRINCIPLES OF LANDSCAPE DESIGN AND GRAPHICS...residential design methods utilizing outdoor room concepts: function, design principles, and composition in developing a landscape plan; drafting, site analysis, graphics. (Prerequisites: 10-001-110, Horticulture-Intro; 10-606-127, Landscape Design Studio Introduction)

10-001-180 LANDSCAPE INSTALLATION INTRODUCTION ...investigate techniques used in landscape construction practices. These include the use of specific landscape tools, plan implementation methods, preliminary site survey methods, proper planting, equipment operations & installations of basic landscape features (Prerequisite: 10-606-127, Landscape Design Studio Introduction)

10-001-182 IRRIGATION ...irrigation practices, procedures, and equipment in the turf and landscape industry; design, installation, and operation of irrigation systems and components. (Prerequisite: 10-001-154, Turf Management 1)

10-001-184 LANDSCAPE DESIGN STUDIO-ADVANCED ...exploration of design elements through individual practicum; survey of landscape design history, land-use planning, topographic design, structural planning of retaining walls, ornamental ponds, bioretention, lighting theory, sustainable practices and bidding procedures. (Prerequisite: 10-001-174, Principles of Landscape Design and Graphics)

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-606-112 COMPUTER APPLICATIONS FOR TECHNICIANS ...basics of a computer system, computer terminology, the Microsoft Windows environment, file management, Microsoft Word and Microsoft Excel.

10-606-125 LANDSCAPE DESIGN TECHNOLOGY ...using computer and computer aided design software as tools for design communication; it is intended to be an introduction to the fundamental components of CAD in landscape design. Property lines, topography, site planning, hardscapes, planting plans, and section view graphics will be covered. (Prerequisites: 10-606-127, Landscape Design Studio; Recommendation: 10-606-112, Computer Apps for Technicians)

10-606-127 LANDSCAPE DESIGN STUDIO INTRODUCTION ...introduction to the techniques of hand drafting and rendering through studio exercises; drafting and sketching techniques include architectural lettering, isometric drawing, section and elevation views, using scales, rendering procedures, etc.

Leadership Development

Program Code 101961
Associate Degree

This program is fully eligible for financial aid.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description
The Leadership Development program provides educational experiences to individuals preparing for, or already engaged in, leadership positions. The program is offered on an accelerated, flexible, part-time or full-time schedule to accommodate working adults.

Program Outcomes
- Demonstrate effective leadership skills.
- Practice ethical leadership.
- Perform in team environments.
- Facilitate effective meetings.
- Value diversity.
- Demonstrate workplace communication skills.
- Understand the financial components of an organization.
- Utilize performance management techniques.
- Apply project management skills.
- Demonstrate professionalism in management of time, stress and assertiveness.
- Advocate for organizational change.
- Apply continuous improvement processes.
- Affect workplace safety positively.
- Apply current legal workplace standards.
- Demonstrate innovative and creative thinking.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- It is recommended that a student have a minimum of two years' work experience and basic computer skills in Word, Excel, and PowerPoint prior to entering the Leadership Development program.

Employment Potential
This program is designed to attract persons who are already engaged in, or are preparing for, leadership roles in an organization. A student who is already in a leadership or other management level position will be able to expand his/her level of effective leadership skills.

A student not currently in a first level management role will develop leadership skills and increase the chance of promotion.

Traditionally, a supervisor plans, organizes, directs, and coordinates activities of non-management employees in various occupational settings; trains and evaluates employees under her or his authority; implements policy decisions and work systems established by upper management; and facilitates communication and work flow.

In addition to traditional supervisory skills and practices, today's leaders must understand system(s), variation, and continuous improvement processes; be facilitators rather than bosses; effectively manage work place diversity; help organizations adapt to change and encourage innovation; display leadership skills; use critical thinking skills; and use communication skills appropriate to a team environment.

Note
- The 13 technical studies courses, beginning with course number 10-196-1xx, are delivered in a variety of formats.
- Some courses have a compressed schedule of six weeks each. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.
- Various Leadership Development Certificates are available. Refer to the program website for information.
- **Program Website: http://leadership-dev. nwtcbit.com/leadership-dev/**

The following certificates/technical diplomas may be applied toward this program:
- 901961, Supervision
- 901962, Ethical Leadership
- 901969, Utility Management
- 901968, Quality Improvement and Innovation
- 901967, Health Care Leadership
- 9019610, Health Care Leadership Advanced

Curriculum
It is recommended that students start with the courses in group 1, continue with group 2, move on to group 3 and finish with group 4. Within each group, students may take classes in whatever order is interesting or convenient for them. Students who follow these recommendations should have a smoother and more meaningful learning experience.

Upon graduation, a student will have completed 66 credits.

GROUP ONE
Catalog No.	Description	Credits
10-102-158	Business-Introduction	3
10-196-164	Supervisors-Personal Skills	3
10-196-189	Team Building/Prob Solve	3
10-196-191	Supervision	3
10-801-136	English Composition 1	3
10-801-198	Speech	3
	TOTAL CREDITS	18

GROUP TWO
Catalog No.	Description	Credits
10-196-134	Legal Issues-Supervisors	3
10-196-193	Human Resource Mgmt	3
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
10-809-197	Contemporary Amer Society	3
	TOTAL CREDITS	15

GROUP THREE
Catalog No.	Description	Credits
10-196-136	Safety-Workplace	3
10-196-169	Diversity in the Workplace	3
10-196-190	Leadership Development	3
10-196-199	Business Ethics	3
10-809-195	Economics	3
10-809-198	Intro to Psychology	3
	OR	
10-809-199	Psychology Of Human Relations	3
	TOTAL CREDITS	18

GROUP FOUR
Catalog No.	Description	Credits
10-101-184	Business Finance/Budgeting	3
10-196-145	Workplace Innovation	3
10-196-188	Project Mgmt Fundamentals	3
10-196-192	Managing-Quality	3
* 10-196-196	Leadership Capstone	3
	TOTAL CREDITS	15
	TOTAL PROGRAM CREDITS	66

CURRICULUM NOTE
* It is strongly recommended that Leadership Capstone, 10-196-196, be taken in the final semester of program courses.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-184 BUSINESS FINANCE/BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w Business Apps)

10-102-158 BUSINESS-INTRODUCTION ...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-196-134 LEGAL ISSUES-SUPERVISORS ...legal practices of recruiting, interviewing, hiring, selection, evaluation/promotion, employee discipline, firing, EEOC and nondiscrimination, employee privacy, workplace harassment, FMLA, ADA and unions.

10-196-136 SAFETY-WORKPLACE ...safety awareness, federal/state/local compliance, inspections, risk analysis, workplace violence, substance abuse, health hazards, first aid, CPR, fire and electrical safety, and emergency preparedness.

10-196-145 WORKPLACE INNOVATION ...use of inventive thinking techniques and innovative methods to improve work processes in multiple workplace environments; research and analyze the use of technology in businesses to promote innovation in the workplace; develop an innovative, entrepreneurial, and entrepreneurial mindset.

10-196-164 SUPERVISORS-PERSONAL SKILLS ...time management and personal planning, emotional intelligence, effective communication, assertiveness and stress management related to the challenges of a supervisor.

10-196-169 DIVERSITY IN THE WORKPLACE ...diversity in the workplace, analyze the effect of perceptions, attitudes, biases, and organization culture on diversity, dealing with barriers, measuring progress, and celebrating success.

10-196-188 PROJECT MANAGEMENT FUNDAMENTALS ...the role of project management, developing a project proposal, demonstration of relevant software, working with project teams, sequencing tasks, charting progress, dealing with variations, budgets and resources, implementation, and assessment.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-190 LEADERSHIP DEVELOPMENT ...leadership effectiveness and organization requirements, individual and group motivation strategies, vision, mission and goals, ethical behavior, leadership style and adaptation, impacts of power and influence, employee development, coaching, managing change, and conflict resolution.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-192 MANAGING-QUALITY ...developing a personal philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, managing a quality improvement project, measuring effectiveness, lean thinking, six sigma, and systems thinking.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

10-196-196 LEADERSHIP CAPSTONE ...leadership assessment, career research and planning; task management, human relations leadership, and professional self-development through the culminating experience of leading a real-life, hands-on project. (Prerequisites: 10-196-189, Team Building/Problem Solving; 10-196-190, Leadership Development; 10-196-188, Project Management Fundamentals)

10-196-199 BUSINESS ETHICS ...ethical points-of-view, morality/ethical theory, utilitarianism, Kantian ethics, justice and the market system, whistle-blowing, trade secrets/conflict of interest, privacy, advertising, product safety, corporate social responsibility, international business.

Machine Tool-CNC Technician
Program Code 324441
Technical Diploma

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Machine Tool-CNC Technician program offers students an additional year of hands-on computer controlled machining and advanced programming experience for graduates of the Machine Tool Operation program.

Program Outcomes
- Control multiple axis CNC machines.
- Use efficient production set up techniques.
- Use advanced CNC programming techniques.
- Control optional features of CNC machines.
- Design and construct jigs and fixtures.
- Use precision measuring practices.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic familiarity with Microsoft Windows.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 60. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Computer Numerical Control (CNC) Technician/Programmer Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets; sets up fixturing and tooling; produces and inspects parts; and edits CNC programs on CNC lathes and machining centers.

Jig and Fixture Apprentice/Trainee: lays out, fits, and assembles parts to make and repair cutting tools, jigs, fixtures, gauges, or machinist's hand tools by analyzing specifications.

Machinist Apprentice/Trainee: sets up and operates a variety of machine tools; and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

Manufacturing Engineering Technician: supports production in a CNC machining environment.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Journey Level Machinist
- Pattern Maker
- Mold Maker
- Tool and Die Maker
- CNC Programmer
- Machine Shop Foreperson/Supervisor

Curriculum
The Machine Tool-CNC Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-420-304	CNC Fundamentals 1	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-348	Precision Measurement	1
31-420-358	CNC Set-Ups	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
	SEMESTER TOTAL	17

SECOND SEMESTER
10-804-102	Math 2-Trades	1
31-420-347	Cutting Tool Technology	1
31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	17

THIRD SEMESTER
31-442-361	Welding-Machine Trades	1
32-420-305	Machine Applications-Advanced	4
32-420-307	Machining Theory-Advanced	2
32-420-308	Metrology	1
32-420-335	CNC Turning Operation	3
32-420-336	CNC Machining Center Oper	3
32-420-337	CNC Fundamentals 3	3
	SEMESTER TOTAL	17

FOURTH SEMESTER
10-809-195	Economics	3
32-420-301	Tool Making	4
32-420-303	Tooling Design	2
32-420-309	CNC Machine Mechanics	2
32-420-310	CNC Techniques-Adv	4
32-420-342	CNC Fundamentals 4	2
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-420-304 CNC FUNDAMENTALS 1 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

31-420-345 MACHINE SHOP 1 ...shop safety, measuring tools/layout, power saw theory/operation, basic theory, operation of drilling machines, bench work, basic engine lathe operation, basic vertical, horizontal, CNC milling machine, surface grinder.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw operation, drilling machine operation basic/theory and operation of engine lathes, basic theory/operation vertical/horizontal milling machines, CNC milling, lathe operation, surface grinder operations. (Corequisite: 31-420-345, Machine Shop 1)

31-420-347 CUTTING TOOL TECHNOLOGY ...tool materials, tool geometry, lathe tools, milling cutters, cutting speeds/feeds, drills, reamers, taps, threading tools, carbide inserts, and diamond, ceramic, Cermet and polycrystalline cutting tools.

31-420-348 PRECISION MEASUREMENT ...how to read/measure english and metric, rules, squares surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement. (Corequisite: 31-420-358, CNC Set Ups)

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers. (Prerequisite: 31-420-304, CNC Fun 1)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisite: 31-420-346, Machine Shop 2)

31-420-357 MACHINE SHOP 4 ...shop safety, measuring tools, power saw operation, drilling machines, bench work and maintenance, advanced engine lathe operation, advanced vertical horizontal and CNC milling operation, grinding machine operation, and CNC turning centers. (Corequisite: 31-420-356, Machine Shop 3)

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

31-421-352 BLUEPRINT READING/SKETCHING-MACHINE 1 ...fundamentals of sketching, orthographic projection, auxiliary views, sectional views, dimensioning, precision and non-precision measurement, and general print reading.

31-421-362 BLUEPRINT READING/SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

31-442-361 WELDING-MACHINE TRADES ...oxyacetylene, brazing, soldering, cutting and hardsurfacing, beads and types of joints, plasma arc cutting, gas metal arc, tungsten metal arc welding.

32-420-301 TOOL MAKING ...performing various machining, heat-treating, and assembly operations necessary to produce a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-303 TOOLING DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-305 MACHINE APPLICATIONS-ADVANCED ...maintain/set-up/operate CNC wire/RAM EDM machines, simulate high-speed machining processes, apply superabrasive tooling, 4th axis milling operations, 3 axis turn/mill/drill applications, 3-D surface machining. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-307 MACHINING THEORY-ADVANCED ...electrical discharge machining (EDM), high speed machining concepts, rapid setup and quick change over procedures, abrasive waterjet, abrasive flow, chemical machining, laser and plasma, palletizing systems. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-308 METROLOGY ...ISO 9000 concepts, Statistical Process Control (SPC) theory and applications, coordinate measuring machine setup and applications, surface texture measurement concepts, and applications for geometric dimensioning and tolerancing (GD&T), optical comparator and high amplification techniques. (Prerequisite: 31-420-348, Precision Measurement)

32-420-309 CNC MACHINE MECHANICS ...CNC machine hydraulics, pneumatics, control, and drive systems.

32-420-310 CNC TECHNIQUES-ADV ...Mill 4th and 5th multi-axis programming, parametric programming, 3D surface machining, productivity optimization, lathe live tooling, and c-axis control. (Prerequisites: 32-420-335 CNC Turning Operation; 32-420-336 CNC Machining Center Oper; Corequisite: 32-420-342 CNC Fundamentals 4)

32-420-335 CNC TURNING OPERATION ...equipment overview, production planning, machine start-up, control panel operations, CNC control tools, operational codes and functions, operation modes and CNC code generation. (Prerequisite: Completion of 1st and 2nd semester courses.)

32-420-336 CNC MACHINING CENTER OPERATION ...equipment overview, production planning, machine start-up, control panel operations, CNC control tools, operational codes and functions, operation modes and CNC code generation. (Prerequisite: Completion of 1st & 2nd semester courses.)

32-420-337 CNC FUNDAMENTALS 3 ...basic AutoCAD, CNC production planning, advanced 2D programming, 3D surface programming, computer assisted CNC programming. (Prerequisite: 31-420-349, CNC Fundamentals 2)

32-420-342 CNC FUNDAMENTALS 4 ...CNC process modeling, 4th axis indexing, advanced CNC lathe programming, 4th axis CNC wire EDM programming, and CNC fabrication punch/burner programming applications. (Prerequisite: 32-420-337, CNC Fundamentals 3)

Machine Tool Operation
Program Code 314201
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description
Machine Tool Operation prepares students to operate machine tools such as engine lathes, milling machines, drill presses, and computer numerical control machines.

Program Outcomes
- Safely set up and operate drill presses.
- Safely set up and operate engine lathes.
- Safely set up and operate horizontal and vertical milling machines.
- Safely set up and operate grinding machines.
- Safely set up, operate, and program computer numerical control milling machines.
- Safely set up, operate, and program computer numerical control turning machines.
- Use semi-precision and precision measuring tools to create parts that meet dimensional specifications shown on part prints.
- Accurately read and interpret blueprints.
- Make mathematical calculations related to machine trades.
- Use a computer-aided manufacturing program to create part profiles and machine code.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic familiarity with Microsoft Windows.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 60. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

CNC Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets, sets up fixturing and tooling, produces and inspects parts, and edits CNC programs on lathes and machine centers.

Machine Set-Up Operator: sets up and operates a variety of machine tools such as radial drill presses, lathes, milling machines, and grinders; machines metal work pieces, tool, or die parts; analyzes specifications; and determines tooling.

Machine Tool Operator: shapes metal to precise dimensions by using machine tools and operates machines such as lathes, milling machines, drill presses, and computer numerical controlled (CNC) machine equipment.

Machinist: analyzes specifications; lays out metal stock; sets up and operates machine tools; and operates a variety of machine tools such as radial drill presses, lathes, milling machines, and grinders to machine a variety of metal work pieces.

Maintenance Machinist: sets up and operates a variety of machine tools and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

With additional education and/or work experience, graduates may find other opportunities for employment.
- All-Around Machinist
- Journeylevel Machinist
- Pattern Maker
- Set-Up Machinist
- Shop Supervisor
- Tool and Die Maker

Note
Graduates of the Machine Tool Operation program have the option of continuing with the second year of the Machine Tool-CNC Technician (Green Bay campus) or the Machine Tool Technics(Marinette) programs.

Curriculum
The Machine Tool Operation Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-420-304	CNC Fundamentals 1	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-348	Precision Measurement	1
31-420-358	CNC Set-Ups	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-804-102	Math 2-Trades	1
31-420-347	Cutting Tool Technology	1
31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	17
	TOTAL CREDITS	34

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-420-304 CNC FUNDAMENTALS 1 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

31-420-345 MACHINE SHOP 1 ...shop safety, measuring tools/layout, power saw theory/operation, basic theory, operation of drilling machines, bench work, basic engine lathe operation, basic vertical, horizontal, CNC milling machine, surface grinder.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw operation, drilling machine operation basic/theory and operation of engine lathes, basic theory/operation vertical/horizontal milling machines; CNC milling, lathe operation, surface grinder operations. (Corequisite: 31-420-345, Machine Shop 1)

31-420-347 CUTTING TOOL TECHNOLOGY ...tool materials, tool geometry, lathe tools, milling cutters, cutting speeds/feeds, drills, reamers, taps, threading tools, carbide inserts, and diamond, ceramic, Cermet and polycrystalline cutting tools.

31-420-348 PRECISION MEASUREMENT ...how to read/measure english and metric, rules, squares surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement. (Corequisite: 31-420-358, CNC Set Ups)

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers. (Prerequisite: 31-420-304, CNC Fun 1)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisite: 31-420-346, Machine Shop 2)

31-420-357 MACHINE SHOP 4 ...shop safety, measuring tools, power saw operation, drilling machines, bench work and maintenance, advanced engine lathe operation, advanced vertical horizontal and CNC milling operation, grinding machine operation, and CNC turning centers. (Corequisite: 31-420-356, Machine Shop 3)

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

31-421-352 BLUEPRINT READING/SKETCHING-MACHINE 1 ...fundamentals of sketching, orthographic projection, auxiliary views, sectional views, dimensioning, precision and non-precision measurement, and general print reading.

31-421-362 BLUEPRINT READING/SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

Machine Tool Technics (Tool and Die Making)
Program Code 324205
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Marinette campus. For information: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description
A second year of advanced Machine Tool CNC Technician, tool and die, and electrical discharge machining for graduates of the Machine Tool Operation Program.

Program Outcomes
- Set-up and operate milling machines.
- Know and apply Statistical Process Control (SPC).
- Set-up and operate computerized electrical discharge machines.
- Design and construct jigs, fixtures, dies and molds.
- Set-up and operate grinding machines.
- Set-up and operate sawing machines.
- Set-up and operate drilling machines.
- Complete basic welding processes.
- Use precision measuring practices.
- Program and operate computerized numerical control milling machines.
- Program and operate computerized numerical control lathes.
- Identify fluid power components.
- Know and apply ISO 9000 quality practices.
- Know and apply mathematics.
- Set-up and operate engine lathes.
- Interpret working drawings.
- Work from blueprints and sketches.
- Know and apply basic metallurgy.
- Know and apply shop safety practices.
- Understand and apply cutting tool speeds and feeds.
- Perform 2-D CAM operations.
- Program 3-D surface machining operations.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic familiarity with Microsoft Windows.
- Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 69; Sentence Skills: 60. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

CNC Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets; sets up fixturing and tooling; produces and inspects parts; and edits CNC programs on CNC lathes and machining centers.

Jig and Fixture Apprentice/Trainee: lays out, fits, and assembles parts to make and repair cutting tools, jigs, fixtures, gauges, or machinist's hand tools by analyzing specifications.

Machine Set-Up Operator: sets up and operates a variety of machine tools such as radial drill presses, lathes, milling machines, and grinders; machines metal work pieces such as patterns and machine tool or die parts, usually on a custom basis; analyzes specifications; and determines tooling.

Machinist Apprentice/Trainee: sets up and operates machine tools and fits and assembles parts to make or repair metal parts, mechanisms, tools, or machines.

Maintenance Machinist: sets up and operates a variety of machine tools; and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

Mold Maker Apprentice/Trainee: lays out, machines, fits, assembles, and finishes metal products and metal molds for injection or compression molding of plastic or rubber products.

Tool and Cutter Grinder: sets up and operates cutter grinding machines used for sharpening tools and cutters that are needed in the manufacturing industry; and inspects re-sharpened tooling.

Tool and Die Apprentice/Trainee: lays out, machines, fits, assembles, and finishes specialized cutting tools used in the mold and die industry as well as dies used in cutting, stamping, and forging processes.

Electrical Discharge Machining (EDM) Operator: sets up and uses Ram or wire EDM machines to manufacture punches, dies, molds, and production parts.

With additional education and/or work experience, graduates may find other opportunities for employment.
- All-Around Machinist
- Journey Level Machinist
- Pattern Maker
- Mold Maker
- Tool and Die Maker
- CNC Programmer
- Machine Shop Foreperson/Supervisor

Curriculum
The Machine Tool Technics (Tool and Die Making) program is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-420-304	CNC Fundamentals 1	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-348	Precision Measurement	1
31-420-358	CNC Set-Ups	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
	SEMESTER TOTAL	17

SECOND SEMESTER
10-804-102	Math 2-Trades	1
31-420-347	Cutting Tool Technology	1
31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-385	Communicating-Writing	1
	SEMESTER TOTAL	17

THIRD SEMESTER
31-442-361	Welding-Machine Trades	1
32-420-300	Mold Die Construction	4
32-420-301	Tool Making	4
32-420-302	Mold Die Design	2
32-420-303	Tooling Design	2
32-420-308	Metrology	1
32-420-337	CNC Fundamentals 3	3
	SEMESTER TOTAL	17

FOURTH SEMESTER
10-809-195	Economics	3
32-420-304	Stamping Die Design	2
32-420-305	Machine Applications-Advanced	4
32-420-306	Stamping Die Construction	4
32-420-307	Machining Theory-Advanced	2
32-420-342	CNC Fundamentals 4	2
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-420-304 CNC FUNDAMENTALS 1 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

31-420-345 MACHINE SHOP 1 ...shop safety, measuring tools/layout, power saw theory/ operation, basic theory, operation of drilling machines, bench work, basic engine lathe operation, basic vertical, horizontal, CNC milling machine, surface grinder.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw operation, drilling machine operation basic/ theory and operation of engine lathes, basic theory/operation vertical/horizontal milling machines; CNC milling, lathe operation, surface grinder operations. (Corequisite: 31-420-345, Machine Shop 1)

31-420-347 CUTTING TOOL TECHNOLOGY ...tool materials, tool geometry, lathe tools, milling cutters, cutting speeds/feeds, drills, reamers, taps, threading tools, carbide inserts, and diamond, ceramic, Cermet and polycrystalline cutting tools.

31-420-348 PRECISION MEASUREMENT ...how to read/measure english and metric, rules, squares surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement. (Corequisite: 31-420-358, CNC Set Ups)

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers. (Prerequisite: 31-420-304, CNC Fun 1)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisite: 31-420-346, Machine Shop 2)

31-420-357 MACHINE SHOP 4 ...shop safety, measuring tools, power saw operation, drilling machines, bench work and maintenance, advanced engine lathe operation, advanced vertical horizontal and CNC milling operation, grinding machine operation, and CNC turning centers. (Corequisite: 31-420-356, Machine Shop 3)

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

31-421-352 BLUEPRINT READING/ SKETCHING-MACHINE 1 ...fundamentals of sketching, orthographic projection, auxiliary views, sectional views, dimensioning, precision and non-precision measurement, and general print reading.

31-421-362 BLUEPRINT READING/ SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

31-442-361 WELDING-MACHINE TRADES ...oxyacetylene, brazing, soldering, cutting and hardsurfacing, beads and types of joints, plasma arc cutting, gas metal arc, tungsten metal arc welding.

32-420-300 MOLD DIE CONSTRUCTION ...squaring plates, boring/milling/turning components, grinding/polishing operations, heat treating, fitting ejector systems, heating/ cooling systems, applying fasteners, engraving/ stamping, RAM EDM machining, molding machine setup. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-301 TOOL MAKING ...performing various machining, heat-treating, and assembly operations necessary to produce a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-302 MOLD DIE DESIGN ...interpret mold die prints, types of mold dies; identify mold plates, ejector pins, return pins, sprues, slides, cavities, runners, gates, leader pins/bushings; select material to be molded and design a mold die. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-303 TOOLING DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-304 STAMPING DIE DESIGN ...interpret stamp die prints, types of stamp dies; identify die blocks, punches, punch plates, gages, stops, strippers, die shoes; design stamp die. (Prerequisites: 32-420-303, Tooling Design; 32-420-301, Tool Making; basic Windows proficiency)

32-420-305 MACHINE APPLICATIONS- ADVANCED ...maintain/set-up/operate CNC wire/RAM EDM machines, simulate high- speed machining processes, apply superabrasive tooling, 4th axis milling operations, 3 axis turn/ mill/drill applications, 3-D surface machining. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-306 STAMPING DIE CONSTRUCTION ...machine die blocks, punches, punch plates, gages, stops, strippers, die shoes using CNC lathes, CNC mills, CNC wire EDM; assemble components into a working die set; set-up on punch press. (Prerequisites: 32-420-303, Tooling Design; 32-420-301, Tool Making)

32-420-307 MACHINING THEORY- ADVANCED ...electrical discharge machining (EDM), high speed machining concepts, rapid setup and quick change over procedures, abrasive waterjet, abrasive flow, chemical machining, laser and plasma, palletizing systems. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-308 METROLOGY ...ISO 9000 concepts, Statistical Process Control (SPC) theory and applications, coordinate measuring machine setup and applications, surface texture measurement concepts, and applications for geometric dimensioning and tolerancing (GD&T), optical comparator and high amplification techniques. (Prerequisite: 31-420-348, Precision Measurement)

32-420-337 CNC FUNDAMENTALS 3 ...basic AutoCAD, CNC production planning, advanced 2D programming, 3D surface programming, computer assisted CNC programming. (Prerequisite: 31-420-349, CNC Fundamentals 2)

32-420-342 CNC FUNDAMENTALS 4 ...CNC process modeling, 4th axis indexing, advanced CNC lathe programming, 4th axis CNC wire EDM programming, and CNC fabrication punch/burner programming applications. (Prerequisite: 32-420-337, CNC Fundamentals 3)

Manufacturing Engineering Technology
(with optional Manufacturing Engineering BS from UW-Stout)
Program Code 106233
Associate Degree
Offered at the Green Bay campus including UW-Stout coursework.

This program is fully eligible for financial aid.

Program Description
The Manufacturing Engineering Technology program prepares students to work in the manufacturing sector assisting engineering and management in the design and development of new products and in the improvement of production processes.

This program will transfer into University of Wisconsin-Stout's Bachelor of Science degree in Manufacturing Engineering offered in Green Bay on the NWTC campus. The third and fourth years of the bachelor's program will be taught by UW-Stout instructors on the NWTC Green Bay campus. To view the third and fourth years, visit the Manufacturing Engineering Technology program page on the NWTC website.

Program Outcomes
- Apply the principles of mathematics, science and lean principles to solve manufacturing related problems.
- Apply proper engineering principles to design for manufacturability.
- Determine production process improvements by application related experiments.
- Explain the principles of material selection and application.
- Assist in the design of products and manufacturing systems.
- Communicate effectively.
- Function effectively in team or group settings.
- Display attitudes consistent with the profession.
- Utilize modeling software tools in the design of prototypes, products or components for selected applications.
- Apply automation principles along with the use of programmable logic controller techniques for design and control of manufacturing processes.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- One year high school algebra or one year advanced math (Geometry, Algebra II, or Trigonometry) or equivalent passed with a "C" grade or better in each semester.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Students must also complete the College Level Math test. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 71; Arithmetic: 101; Sentence Skills: 76. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact the program Academic Advisor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the manufacturing sector as a technologist in Manufacturing Engineering, Industrial Engineering, Productivity Improvement or Continuous Improvement, assisting engineering and management in the design and production of products as efficiently as possible.

Note
- Students who choose to take Physics, Calculus and Chemistry courses at other higher education institutions must be aware of prerequisite requirements and must meet with the Academic Advisor of Manufacturing Engineering Technology prior to course entry.
- Students should have an aptitude for science and mathematics. Students should take as many upper level math and science courses in high school as possible, including algebra, trigonometry, pre-calculus, physics and chemistry.
- Students must have an acceptable Academic Skills Assessment College Math score (63 or higher) or equivalent assessment, or have completed or tested out of 10-804-118, Intermediate Algebra w Apps, before taking the following first semester program courses: 10-623-170, Engineering Materials 10-804-197, College Algebra & Trig w Apps and 10-806-135, College Chemistry.
- Students must have completed one year of high school Chemistry (with lab component) within the past five years with a "B" or better, OR 10-806-134, General Chemistry, before taking first semester course, 10-806-135, College Chemistry.
- Students will also need to have mastered basic computer skills in Windows, Word and Excel including file creation and management.
- Students must have experience with manual drafting or sketching or need to take 10-614-113, 2D Essentials prior to or concurrent with 10-606-113, CAD.

Curriculum
Manufacturing Engineering Technology is an Associate Degree with the opportunity to complete a UW-Stout Bachelor's Degree at NWTC Green Bay. Upon completion of the AAS, students will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-623-170	Engineering Materials - Intro	3
10-801-136	English Composition 1	3
10-804-197	College Algebra & Trig w Apps	5
10-806-135	College Chemistry	5
	SEMESTER TOTAL	16

SECOND SEMESTER
10-606-113	CAD	2
10-623-171	Polymer Composite Processes	3
10-623-175	Casting and Joining Processes	3
10-801-198	Speech	3
10-804-198	Calculus 1	4
	SEMESTER TOTAL	15

Curriculum *continued*
SUMMER SEMESTER
10-623-166	Manufacturing Engr Internship	1
	SEMESTER TOTAL	1

THIRD SEMESTER
10-606-126	Geometric Dimension/Toleran	2
10-606-157	Solidworks Fund and Drawings	2
10-623-172	Material Removal/Forming	3
10-806-286	Calculus Based Physics 1	5
10-809-172	Race Ethnic & Diversity	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	18

FOURTH SEMESTER
10-623-167	Engineering Economy	2
10-623-168	Computer Aided Manufacturing	3
10-623-169	Lean Manufacturing Systems 1	2
10-623-173	Engineering Mechanics	3
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-181	Calculus 2	4
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

CURRICULUM NOTE
The following UW-Stout courses are required for Bachelor Degree completion:

SUMMER AFTER FOURTH SEMESTER
MATH-250	Differential Equations/Linear Alg
PHYS-282	University Physics II

FIFTH SEMESTER
GEN ED	Physical Well Being
MFGE-275	Thermodynamics/Heat Transfer
CHEM-341	Chemistry of Materials
MECH-294	Mechanics of Material
STAT-330	Probability & Statics

SIXTH SEMESTER
MFGE-351	Mfg. Process Engineering I
MFGE-352	Mfg. Process Engineering II
ELEC-290	Circuits & Devices
GEN ED	Humanities
MFGE-391	Fluid Mechanics

SEVENTH SEMESTER
INMGT-422	Quality Engineering
MFGE-363-B	Adv. Controls/Instrument
MFGE-405	Capstone I: Product/Syst. Design
GEN ED	Gen Ed Technology
INMGT-335-B	Lean Mfg. Systems II
MFGE-441	Design of Jigs/Fixtures/Tooling
GEN ED	English Comp II

EIGHTH SEMESTER
MFGE-440	Design/Simulation Mfg. Systems
MFGE-410	Capstone II: Mfg. Syst. Design
GEN ED	Humanities
GEN ED	Social/Behavioral Science
GEN ED	Humanities

For further detail, go to:
http://www.nwtc.edu/academics/ProgTeamSites/manufacturingengineering/Pages/home.aspx

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-126 GEOMETRIC DIMENSIONING/TOLERANCING ...review of standard dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. (Prerequisite: 10-606-113, CAD; OR 10-606-157, Solidworks Fund and Drawings OR 10-606-162, Solidworks Fundamentals)

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ...terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, Solidworks drawing environment and fully dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical, OR 10-614-113, 2D Essentials Sketching-Technical; Prerequisite: Familiarity with Windows file management)

10-623-166 MANUFACTURING ENGINEERING INTERNSHIP ...the application of theory, skills, and techniques in the manufacturing engineering profession. (Prerequisite: instructor approval)

10-623-167 ENGINEERING ECONOMY ...using source and application of funds; cost control, valuation, depreciation, replacement theory and taxation to analyze and assist in making management decisions. (Prerequisites: 10-804-197, College Algebra & Trig w Apps OR 10-804-195, College Algebra w/Apps AND 10-804-196, Trigonometry w/ Apps; proficiency with advanced functions of Excel strongly recommended)

10-623-168 COMPUTER AIDED MANUFACTURING ...effects of product mix and demand patterns on manufacturing system design and selection of process control methods. Introductions to quick changeover strategies, reprogrammable automation, numerical control, robotics and other computerized processing techniques. (Prerequisites: 10-623-172, Material Removal/Form; 10-606-126, Geometric Dimensioning/Tolerance)

10-623-169 LEAN MANUFACTURING SYSTEMS 1 ...introduction to production/operations management and lean manufacturing system design for engineers. Emphasis is given to analysis and design of production systems, facility layout, and globalization. (Prerequisites: 10-804-197, College Algebra & Trig w Apps OR 10-804-195, College Algebra w/Apps AND 10-804-196, Trigonometry w/ Apps)

10-623-170 ENGINEERING MATERIALS - INTRO ...exposure to engineering materials, their properties, and behavior. Topics will include: material types, material testing, mechanical properties, heat treatment and materials selection. (Prerequisites: 10-806-135, College Chemistry; 10-804-197, College Algebra & Trig w Apps OR 10-804-195, College Algebra w Apps AND 10-804-196, Trigonometry w Apps)

10-623-171 POLYMER AND COMPOSITE PROCESSES ...polymer materials and properties, material testing, product design and evaluation, processing methods, machine setup and operation. Course requirements include a trip to UW-Stout for lab work. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-623-172 MATERIAL REMOVAL AND FORMING PROCESSES ...machine tool concepts providing an operational knowledge of machining and metal forming processes. Analysis and application of primary and secondary processing methods for the manufacture of products. Measurement principles and practice applied to inspection and process control. Development of process designs appropriate for product specifications. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-623-173 ENGINEERING MECHANICS ...force systems and equilibrium in two and three dimensions, free body diagrams, trusses, frames, friction, kinematic analysis of particle and rigid body translation, rotation, and general plane motion, force-acceleration analysis, work-energy analysis, impulse momentum analysis, impact, damped and undamped vibrations, and forced vibrations. (Prerequisite: 10-806-286, Calculus Based Physics 1)

10-623-175 CASTING AND JOINING PROCESSES ...welding of metals, ceramic and plastic. Brazing and soldering of appropriate metals, setup and operate welding equipment. Thermal effects and destructive testing. Evaluation of adhesives and mechanical fasteners. Welding codes and ASTM standard comparative processing cost. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC System, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-804-181 CALCULUS 2 ...continuation of Calculus I covering integration techniques, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, Infinite series including Maclaurin, Taylor, and Fourier. (Prerequisite: 10-804-198, Calculus I)

10-806-135 COLLEGE CHEMISTRY ...covers measurement, chemical nomenclature, chemical reactions and stoichiometry, atomic structure, gas laws, thermochemistry, chemical bonding and solution chemistry. (Prerequisite: One year of high school Chemistry with lab component within the past 5 years with a "B" or better OR 10-806-134, General Chemistry with a "C" or better within the past 5 years. Corequisite: 10-804-197, College Algebra and Trig w/Apps, OR 10-804-195, College Algebra w/Apps AND 10-804-196, Trigonometry w/ Apps or equivalent.)

Marine Construction *(pending WTCS approval May 2011)*

Program Code 314481

Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description

The Marine Construction Technical Diploma will prepare learners with broad-based programming with specific skills in marine metals, electrical, mechanical, project management as well as component and materials testing skills. The program will provide a skilled workforce in trades who are able to build, install, operate and maintain integral marine systems.

Program Outcomes

- Perform safety evaluation of the designated worksite, or assigned evolution.
- Use contextual reading skills, using shop forms, safety labels, etc.
- Interpret basic mechanical and/or electrical blueprints.
- Perform basic welding on carbon steel, and/or stainless steel, and/or aluminum.
- Verify quality control and workmanship metrics of production work.
- Use relevant industry terminology.
- Use materials according to application.
- Use appropriate measuring systems in the industry.
- Communicate with co-workers and supervisors.

Requirements for Program Entry

- Complete Application.
- High School transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehensions: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84; Algebra: 46 (for Marine Electricity students only). Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the Shipbuilding and Repair Industry in one of the following marine construction fields.

Marine Welder: employment in Structural Welding, Welder/Fabricator, and Pipe Welder are possible. In these positions the graduate will build and repair components of vessels using basic knowledge of blueprints, metallurgy, and layout while applying the major welding processes used by the industry. With additional education and/or work experience, graduates may find other opportunities for employment, such as Journey Level Welder, Welding Inspector, Welding Supervisor, Journey Level Welder/Fabricator, Pipe Fitter, and Outfitter.

Marine Electrician: employment in installing and servicing conduit, wire, cable, and equipment in new and existing commercial, industrial structures and marine vessels. Additionally, you may find employment in installing, maintaining, and troubleshooting motors, motor controls, lighting, and other electrical systems in an industrial plant or marine vessel. With additional education and/or work experience, graduates may find other opportunities for employment, such as Electrical Engineering Technician, Electrical Supervisor, Journey Level Electrician, and Electrical Maintenance Supervisor.

Marine Mechanic: entry level employment as a Steel Fitter, or Outfitter, or Machinery Installer in a marine environment is possible. In these positions the graduate will install shipboard components during the construction or repair of vessels. With additional education and/or work experience, graduates may find opportunities for employment, such as Journey Level Ship Fitter, Journey Level Outfitter, Maintenance Mechanic, or Maintenance Supervisor.

Note

- The Marine Mechanic sub-plan is offered at the Green Bay campus only. The Marine Welding and Marine Electricity sub-plans are offered at both the Green Bay & Marinette campuses.
- Marine Welding students should take 31-421-334, Blueprint Reading I and other Marine Construction students have the option to take either 31-421-334, Blueprint Reading I or 31-421-355, Blueprint Reading/Sketch Industrial.
- Marine Welding students should take 31-421-333, Blueprint Reading II and other Marine Construction students have the option to take either 31-421-333, Blueprint Reading II or 31-421-362, Blueprint Reading/Sketching-Machine Trades 2.
- Marine Mechanical students should take 10-601-136 HVAC/R Safety and other Marine Construction students have the option to take either 31-449-301 Electrical Safety or 10-601-136 HVAC/R Safety.

Curriculum

The Marine Construction Technical Diploma is a one-year, three-semester program. This program starts in June. A sub-plan must be declared by the completion of Semester 1. All courses in that sub-plan will need to be completed to graduate. Upon graduation, a student will have completed 41 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-448-203	Intro to Marine Technology	4
10-804-101	Math 1-Trades	2
31-421-334	Blueprint Reading I	2
	OR	
31-421-355	Blueprint Rdg/Sket-Indus	2
31-442-301	Welding-Cutting/Visual	1
	SEMESTER TOTAL	9

SECOND SEMESTER

Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
31-421-333	Blueprint Reading II	2
	OR	
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-310	Metallurgy	2
31-449-301	Electrical Safety	1
	OR	
10-448-207	Marine HVAC/R Safety	1
	10 credits from your DECLARED subplan	10
	SEMESTER TOTAL	16

THIRD SEMESTER

Catalog No.	Description	Credits
10-196-189	Team Building/Prob Solve	3
10-623-150	Lean Manufacturing	1
31-448-363	Intro to Marine Composites	3
31-801-386	Communicating Effectively	1
	8 credits from your DECLARED sub-plan	8
	SEMESTER TOTAL	16
	TOTAL CREDITS	8
	TOTAL PROGRAM CREDITS	41

CURRICULUM NOTE

It is recommeded courses in a sub-plan be taken in the order listed. All sub-plans equal 18 credits.

SUB-PLANS:

MARINE WELDING

31-442-317 Welding-Gas Metal Arc, 5 credits
31-442-335 Metal Fabrication I, 3 credits
31-442-334 Metal Fabrication II, 2 credits
31-442-321 Welding-Gas Tungsten Arc, 5 credits
31-448-362 Marine Welding, 3 credits

MARINE ELECTRICITY

31-413-314 DC Circuits, 2 credits
31-413-334 AC Circuits, 2 credits
31-413-327 Commercial Wiring Techniques, 2 credits
31-448-364 Marine Electrical Codes, 1 credit
31-804-312 Math Algebra Trades, 1 credit
10-664-100 Automation 1: Control Logic, 1 credit
10-664-101 Automation 2: Motor Control, 1 credit
31-413-328 Motors/Transformers, 2 credits
31-413-339 Industrial Controls, 3 credits
31-413-349 Electric Motor Control, 3 credits

MARINE MECHANICAL

31-462-305 Mechanic 1-Industrial, 5 credits
31-462-306 Mechanic 2-Industrial, 5 credits
10-448-208 Marine HVAC/R Mechanical Service Fund, 2 credits
10-620-100 Fluids 1: Basic Pneumatics, 1 credit
10-620-101 Fluids 2: Basic Hydraulics, 1 credit
10-448-209 Marine HVAC/R Refrigeration Fund, 3 credits
10-620-105 Rigging Systems 1, 1 credit

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-448-203 INTRODUCTION TO MARINE TECHNOLOGY ...covers industrial safety, trades math, maritime terminology; basics of tooling, blueprint reading, layout assembly practices, welding, and HVAC; provides intro to composites, marine propulsion, rigging, electricity, project management, quality, and team building.

10-448-207 MARINE HVACR SAFETY ...standard first aid, CPR, OSHA 10-hour course as it relates to the HVAC/R field, ladder safety, lockout/tagout electrical procedures, and industry standard power and hand tool safety.

10-448-208 MARINE HVAC/R MECHANICAL SERVICE FUNDAMENTALS ...mechanical math, measurement, mechanical fasteners, concrete fasteners, proper hand tool usage, proper power tool usage, piping supports, black iron pipe threading and assembly and PVC assembly. (Prerequisite: Accepted into the Marine Construction program; Corequisites: 10-448-207 Marine HVAC/R Safety, 10-448-209 Marine HVAC/R Refrigeration Fundamentals)

10-448-209 MARINE HVAC/R REFRIGERATION FUNDAMENTALS ...principles of refrigeration and air conditioning, temperature, heat and pressure measurement, system component operation, testing for proper system operation using industry standard tools and practices (Prerequisite: Accepted into the Marine Construction program; Corequisites: 10-448-207 Marine HVAC/R Safety, 10-448-208 Marine HVAC/R Mech Srvs Fund)

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system.

10-623-150 LEAN MANUFACTURING ...lean manufacturing, value-stream mapping, visual workplace set-up reduction, and total productive maintenance.

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

31-413-314 DC CIRCUITS ...electron theory, electromotive force sources, voltage, current, resistance, power, Ohm's Law, series-parallel circuits and test equipment. (Corequisite: 31-804-312, Math-Algebra/Trades)

31-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low-voltage wiring. (Corequisite: 31-413-346, Commercial Electrical Code OR 31-448-364, Marine Electrical Codes)

31-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Prerequisite: 31-413-334, AC Circuits)

31-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series and parallel AC circuits, AC power, power factor corrections, rectification of AC, diodes and silicon controlled rectifiers. (Corequisites: 31-804-312, Math-Algebra/Trades; 31-413-314, DC Circuits)

31-413-339 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control (Corequisite: 31-413-328, Motors and Transformers)

31-413-349 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Corequisite: 31-413-339, Industrial Controls)

31-421-333 BLUEPRINT READING II ...develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings. (Prerequisites: Accepted into Welding or Marine Construction program; 31-421-331, Blueprint Reading 1).

31-421-334 BLUEPRINT READING I ...orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, welding symbols, weld joint nomenclature, welding joint geometry, metric conversion and interpretation of fabrications from prints. (Prerequisite: Accepted into Welding or Marine Construction program)

31-421-355 BLUEPRINT READING/SKETCHING-INDUSTRIAL MECHANIC ...orthographic/ isometric sketching, multiview print reading, dimensioning and tolerancing, section/auxiliary views, weld symbols, piping/ hydraulic prints, and electric motor prints.

31-421-362 BLUEPRINT READING/SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-301 WELDING-CUTTING/VISUAL ...visual inspection of weld and cut edges, manual and machine oxy fuel gas cutting, air carbon arc cutting, plasma arc cutting, and mechanical cutting methods. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-317 WELDING-GAS METAL ARC (GMAW) ...welding safety, GMAW equipment/set up, joint details and distortion control, GMAW weld faults, welding metallurgy, and weld symbol interpretation. (Prerequisite: Accepted into Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-321 WELDING-GAS TUNGSTEN ARC ...perform gas tungsten arc welding (GTAW) in all positions, on plain carbon steel, aluminum, and 3XX stainless steel. (Prerequisite: Accepted into the Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-334 METAL FABRICATION II ...advanced metal fabrication tools developing assembly and sub-assemblies from working prints using various fabrication processes. Additionally, rigging and lifting, distortion control, and basic CNC programming will be incorporated. (Prerequisites: Accepted into the Welding OR Marine Construction program; 31-442-335, Metal Fabrication 1)

31-442-335 METAL FABRICATION I ...safety and introduction to basic metal fabrication tools and equipment utilizing precision measuring tools, geometric nomenclature basic layout and assembly skills along with polygon construction, and triangulation from scale drawings. (Prerequisite: Accepted into the Welding or Marine Construction program)

31-448-362 MARINE WELDING ...safety, equipment, accessories, inspection and repairs, weld types, joint nomenclature, surface welds, joints, positions and groove welds utilizing Shielded Metal Arc Welding (SMAW) and Flux Core Welding methods.

31-448-363 INTRODUCTION TO MARINE COMPOSITES ...an introduction to marine composite fundamentals of working with resins, fabrics and adhesives. Methods for ensuring quality control in the use of composite industry and ABYC standards stressed.

31-448-364 MARINE ELECTRICAL CODES ...electrical schematic reading, American Boat and Yacht Council (ABYC) and American Bureau of Shipping (ABS) electrical requirements as applied to unique marine use ensuring compliance with United States Coast Guard regulation as well as industry best practices.

31-449-301 ELECTRICAL SAFETY ...standard first aid, CPR and OSHA 10-hour course as it relates to the electrical field.

31-462-305 MECHANIC 1-INDUSTRIAL ...basic elements of mechanics: precision measurements, safe use of hand and power tools, industrial lift truck operation, sheet metal layout and fabrication, machine mounting bases mechanical fasteners.

31-462-306 MECHANIC 2-INDUSTRIAL ...structural steel nomenclature and installation, safe and proper use of scaffolding, rigging and weight estimation, maintenance of hand and cutting tools, speciality tool fabrication, piping systems, and tubing systems. (Corequisite: 31-462-305, Mechanic 1 Industrial)

Marine Engineering Technology *(pending WTCS approval May 2011)*
Program Code 104481
This program is fully eligible for financial aid.
Associate Degree
Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description
The Marine Engineering Technology Associate Degree will prepare learners with programming specific to marine skills. Marine Engineering Technicians will assist the management team by designing marine systems and components. The program will provide a skilled workforce of engineering technicians who are able to design integral marine systems.

Program Outcomes
- Display proficiency with the use of CAD-based design software/procedures.
- Develop from design drawings the process drawings for the production floor.
- Apply mathematical reasoning.
- Perform safety evaluation of the designated worksite or assigned evolution.
- Analyze stresses caused by forces acting on bodies at rest.
- Analyze forces acting on bodies at rest.
- Interpret basic mechanical and/or electrical blueprints.
- Verify quality control and workmanship metrics.
- Maintain files on a personal computers.
- Use relevant industry terminology.
- Use materials according to application.
- Use appropriate measuring systems in the industry.
- Function effectively in team or group settings.
- Display attitudes consistent with the profession.
- Communicate with co-workers and supervisors.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- A high school background in mathematics, science and industrial education.
- High school algebra or equivalent.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehensions: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 96; Sentence Skills: 84, College Level Math: 63. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor, (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Marine Engineering Technology on the College Level Math assessment is 63.
- The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

Employment Potential
A graduate of this program will have the potential for employment in the marine manufacturing sector of building boats, to yachts, to ships as a Marine Engineering Technician, a Mechanical Design Technician, a Mechanical Drafter, or an Electro-Mechanical Designer.

With additional education and/or work experience, graduates may find other opportunities for employment as a
- Naval Architect
- Marine Engineer
- Project Engineer
- Lead Designer

Note
Students must have had two years of high school algebra, one year of high school geometry, and an acceptable Academic Skills Assessment College Math score or have completed or tested out of Intermediate Algebra w Apps, course 10-804-118, before taking the following first semester program course: 10-804-196, Trigonometry w/Apps.

Curriculum
The Marine Engineering Technology-Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-448-203	Intro to Marine Technology	4
10-606-113	CAD	2
10-606-157	Solidworks Fund and Drawings	2
10-614-113	2D Essentials	2
10-801-196	Oral/Interpersonal Comm	3
10-804-196	Trigonometry w Apps	3
	SEMESTER TOTAL	16

SECOND SEMESTER
Catalog No.	Description	Credits
10-442-153	Prototype Metal Fabrication	2
10-606-103	2D CAD - Advanced	3
10-606-122	CAD-Fabrication & Assembly	2
10-606-126	Geometric Dimensioning/Tolerancing	2
10-804-195	College Algebra w Apps	3
10-806-154	General Physics 1	4
	SEMESTER TOTAL	16

THIRD SEMESTER
Catalog No.	Description	Credits
10-448-204	Naval Architecture I	3
10-448-206	Ship Constructor	3
10-606-135	Machine Members-Strength	5
10-606-158	Solidworks Advanced	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	18

FOURTH SEMESTER
Catalog No.	Description	Credits
10-448-205	Naval Architecture II	3
10-606-141	Design Problems	3
10-606-159	Materials Science	3
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-442-153 PROTOTYPE METAL FABRICATION...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication. (Corequisite: 10-606-122, CAD Fab & Assembly; OR 10-614-122, Prototype Design)

10-448-203 INTRODUCTION TO MARINE TECHNOLOGY ...covers industrial safety, trades math, maritime terminology; basics of tooling, blueprint reading, layout assembly practices, welding, and HVAC; provides intro to composites, marine propulsion, rigging, electricity, project management, quality, and team building.

10-448-204 NAVAL ARCHITECTURE I ...lines plan, static stability, hydrostatic curve, determination of areas, volumes, displacement, buoyancy of damaged vessels and stability criteria, launching of ships. (Prerequisites: 10-804-195, College Algebra w/Apps; 10-804-195, Trigonometry w/Apps)

10-448-205 NAVAL ARCHITECTURE II ...continuation of Naval Architecture I covering shipbuilding materials, stresses, loading, propulsion, resistance, speed and power calculation of a vessel. (Prerequisites: 10-448-204, Naval Architecture I; 10-448-206, Ship Constructor)

10-448-206 SHIP CONSTRUCTOR ...Ship Constructor terminology, software operations, interface basics, creating virtual ship models, revolved features, Ship Constructor drawing environment and fully dimensioned assembly drawings. (Prerequisite: 10-606-103, 2D CAD - Advanced)

10-606-103 2D CAD-ADVANCED ...primary and successive auxiliary views; intersections and developments; intersections of planes and dihedral angles; piercing points; angles between lines and planes; revolutions; vectors. (Prerequisite: 10-606-113, CAD)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-122 CAD-FABRICATION & ASSEMBLY ...sheet metal drawings as applied to brackets, enclosures & guarding; welding drawings; threads & fasteners; stock components; working drawing documentation. (Prerequisite: 10-606-113, CAD)

10-606-126 GEOMETRIC DIMENSIONING/ TOLERANCING ...review of standard dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. (Prerequisite: 10-606-113, CAD; OR 10-606-157, Solidworks Fund and Drawings OR 10-606-162, Solidworks Fundamentals)

10-606-135 MACHINE MEMBERS-STRENGTH ...force analysis, moments, truss and frame analysis, simple stress, properties of materials, joint design, centroids and moments of inertia, beam design, shafting design, combined stresses, columns. (Prerequisites: 10-806-154, General Physics 1; 10-804-196, Trigonometry w Apps)

10-606-141 DESIGN PROBLEMS ...data gathering, mathematics, document standard practices, project management and teamwork. (Prerequisites: 10-606-126, Geometric Dimensioning/Tol; 10-606-135, Machine Members-Strength; 10-606-103, 2D CAD Adv; 10-606-158, Solidworks Adv OR 10-606-160, Solidworks Sheet Metal AND 10-606-166, Solidworks Loft & Surface)

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ...terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, Solidworks drawing environment and fully dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical, OR 10-614-113, 2D Essentials Sketching-Technical; Prerequisite: Familiarity with Windows file management)

10-606-158 SOLIDWORKS ADVANCED ...sweeps, equations, configurations, draft, base and derived parts, assemblies, assembly drawings, auxiliary, section and special views, sheet metal, lofting, surfacing, and core and cavity. (Prerequisite: 10-606-157, Solidworks Fund and Drawings OR 10-606-163, Solidworks-Intermediate)

10-606-159 MATERIALS SCIENCE ...engineering materials, material selection, the relationship between material structure and properties, and failure analysis for design improvement. Materials covered include: metallic, polymeric, ceramic, and composite/exotic.

10-614-113 2D ESSENTIALS ...an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning. Knowledge integral to model building.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

Marketing
Program Code 101043
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description
Marketing prepares students to perform basic marketing functions in industrial, wholesale, retail, and service areas. Specific areas of study are sales, promotion principles, market research, and customer service.

Program Outcomes
- Recommend a pricing plan.
- Evaluate alternative distribution strategies.
- Develop a product and service mix.
- Generate marketing information for effective decision making.
- Apply continuous improvement strategies to solve marketing problems.
- Assess emerging trends in global trade that impact business and marketing.
- Create a personal professional development plan.
- Manage resources and risks to contribute to profitability of the organization.
- Manage marketing within an enterprise.
- Apply technology to marketing and marketing information systems.
- Apply legal and ethical principles to personal, social, and professional behaviors.
- Develop long-term strategic marketing plans.
- Formulate selling strategies.
- Apply effective leadership skills.
- Design a promotion plan.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see Basic Education.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Customer Service Representative: initiates follow-up work with current customers, processes and tracks customer orders, acts as an internal contact for customer inquiries as well as a liaison to field sales organizations, and uses telecommunications skills extensively.

Marketing Assistant: assists department head by performing similar duties; directs and coordinates department activities and functions in commercial, industrial, or service establishments; reviews and analyzes reports, records, and directives; confers with supervisory personnel; and performs administrative tasks such as pricing schedules.

Marketing Research Assistant: researches market conditions to determine potential sales of product or service, examines and assists in analyzing data to forecast future marketing trends, and prepares reports and graphic illustrations of findings.

Sales Promotion Coordinator: develops a calendar of promotional events, analyzes media utilization, reviews media rates and cost effectiveness, performs follow-up detail work on promotion implementation, coordinates internal communication, and develops internal promotional support material.

Sales Representative: sells to other businesses such as factories, wholesalers, retailers, and institutions; sells business, financial, and consumer products and services; sets up displays; visits customers; does paperwork; writes correspondence; and studies literature relating to products.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Business Owner
- Customer Service Manager
- Insurance Agent
- Marketing Manager
- Promotions Manager
- Real Estate Salesperson
- Sales Manager

The following certificates/technical diplomas may be applied toward this program:
- 9010411, Contact Center
- 901049, Customer Service
- 901047, Promotions and Event Management

Curriculum
The Marketing Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-104-101	Selling Principles	3
10-104-110	Marketing Principles	3
10-104-182	Personal Brand-Development	2
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-104-107	Marketing Comm-Integrated	3
10-104-124	Marketing Presentations	1
10-104-191	Customer Service	3
10-104-198	Market Research	3
10-801-198	Speech	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16

THIRD SEMESTER
Catalog No.	Description	Credits
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-104-120	Marketing Info Mgmt	3
10-104-176	Consumer Behavior-Mktg	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
10-102-150	Business Law & Ethics	3
10-104-119	Social Media Marketing	3
10-104-125	Event Marketing	3
10-104-183	Personal Brand-Portfolio	1
10-104-189	Sales Management	3
10-104-199	Mktg Internship Practicum OR	2
10-104-197	Mktg Field Research	2
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	67

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-104-107 MARKETING COMMUNICATIONS-INTEGRATED ...creating, coordinating and integrating advertising, public relations and marketing activities for a specific customer or audience. A campaign will be developed and presented.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-119 SOCIAL MEDIA MARKETING ...understand the social media revolution. This course will provide students with the practical knowledge and insights needed to successfully plan, implement, manage and measure social media marketing efforts. (Prerequisite: 10-104-110, Marketing Principles)

10-104-120 MARKETING INFORMATION MANAGEMENT ...opportunity analysis, marketing research processes and data sources, forecasting sales of new and established products, master plan for a marketing strategy, and implementation and control of marketing programs.

10-104-124 MARKETING PRESENTATIONS ...the use of Microsoft PowerPoint as a tool to create effective, professional-looking marketing presentations.

10-104-125 EVENT MARKETING ...planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-176 CONSUMER BEHAVIOR-MKTG ...motivation and personality, information processing, life styles, group influences, post-purchase behavior, and other behaviors related to marketing.

10-104-182 PERSONAL BRAND-DEVELOPMENT ...learn how personal branding allows you to differentiate yourself from the competition through appearance, personality, and marketing competency.

10-104-183 PERSONAL BRAND-PORTFOLIO ASSESSMENT ...the organization, reporting, and assessment of your personal brand portfolio. The course will involve one-on-one meetings with a marketing instructor who will guide students through the process. (Prerequisite: 10-104-182, Personal Brand-Development)

10-104-189 SALES MANAGEMENT ...sales-force organization, staffing, and operations; recruiting and processing applicants; training programs; motivating; compensation; forecasting and budgeting; territories and routing; quotas; evaluating performance; and decision-making through case study analysis.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-104-197 MARKETING FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-104-198 MARKET RESEARCH ...identifying problems and formulating problem hypothesis, situation analysis, informal investigation and secondary research, project objectives, primary research, sampling, questionnaires, interviews, processing the written report, and conclusions and data analysis.

10-104-199 MARKETING INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Marketing and Graphic Communications
Program Code 101117
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Marketing and Graphic Communications trains students in Graphic Design, Digital Print Media, and Web. Students complete a portfolio review session with the instructional team during each semester.

Program Outcomes
- Conduct integrated marketing plan.
- Implement promotional strategies.
- Create and design for print/web.
- Assemble and manage a design portfolio.
- Perform electronic prepress operations.
- Operate printing equipment.
- Manage color separations and digital print output.
- Perform digital publishing operations.
- Implement typography strategies.
- Design web pages.
- Complete 144 hours of internship work experience in the field.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 51; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Desktop Publisher: produces professional publications using electronic publishing software, scans graphic images, places text and graphics files onto the page, and operates image setters.

Graphic Designer: develops advertising concepts and prepares art for the final printed piece.

Advertising Assistant: works with the ad director or store manager to plan and prepare advertising for print, radio, and TV use.

Commercial Art Worker: prepares artwork and copy to be used in label production, package design, printed materials; prepares process separations; preflights electronic files; manages color control; and manages fonts.

Digital Print Technician: prepares computer files for variable data printing or produce print on demand applications.

Layout Designer: designs basic plans for print advertising, passes on work to a commercial artist or copywriter, and is responsible for final electronic files.

Printing Support Worker/Customer Service Representative: handles electronic and pre-press operations, making color separations, electronic scanning, image editing, and color proofing.

Public Relations Assistant: assists in public relations activities helping to produce brochures, press releases, displays, and newsletters; organizes and prepares materials for use in presentations in the form of handouts, slide art/copy, transparencies, and charts.

Pre-Press Technician: prepares computer documents for printing; trapping, font usage, picture usage, color management, clipping paths, and placing high and low resolution graphics into document.

Website Designer: builds graphic elements for functional websites.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Account Executive
- Art Director
- Design Supervisor
- Media Buyer

The following certificates/technical diplomas may be applied toward this program:
906141, Applied Graphics for Prototype and Design

Curriculum
The Marketing and Graphic Communications Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-111-120	Macintosh Publishing	3
10-111-161	Macintosh Illustration	3
10-204-110	Publishing Technologies	3
10-809-103	Think Critically & Creatively	3
	SEMESTER TOTAL	16

SECOND SEMESTER
10-111-110	Macintosh Image Editing-Adv	3
10-111-111	Marketing 1-Visual Design	3
10-111-125	Graphic Reproduction Tech	3
10-111-162	Typography Design/Paper	2
10-152-185	Website Coding	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	17

THIRD SEMESTER
10-102-100	Bus and Info Tech Occup Prep	1
10-104-107	Marketing Comm-Integrated	3
10-111-121	Marketing 2-Visual Design	3
10-111-142	Graphic Reproduction-Adv	2
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	18

FOURTH SEMESTER
10-104-191	Customer Service	3
10-111-199	Mktg Comm Intern Practicum	2
10-204-126	Digital Print Applications	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	Elective	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

CURRICULUM NOTE
- Macintosh-Intro class is a corequisite to any first semester course in the Marketing and Graphic Communications program.
- It is also recommended that learners take the Marketing and Graphic Communications Internship Practicum course (10-111-199) in their last semester.

SUGGESTED ELECTIVES
10-204-124 Variable Data Publishing
10-203-104 Photography-Digital
10-111-150 Web Graphic Design

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-104-107 MARKETING COMMUNICATIONS-INTEGRATED ...creating, coordinating and integrating advertising, public relations and marketing activities for a specific customer or audience. A campaign will be developed and presented.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-111-110 MACINTOSH IMAGE EDITING-ADVANCED ...Photoshop's tool box, layers, paths, channels, scans, color separations, photo retouching. Web pages, Web graphics, Web safe colors, HTML code, Adobe Dimensions, image mapping and interactive capabilities of software. (Prerequisites: 10-111-103, Macintosh-Intro; 10-111-101, Macintosh-Image Editing)

10-111-111 MARKETING 1-VISUAL DESIGN ...design and drawing for graphic reproduction, design trends, and applications; brochure, advertising, and corporate I.D. package created using basic design process of thumbnails, rough, and comprehensive layout. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-121 MARKETING 2-VISUAL DESIGN ...apply basic design techniques to an advertising campaign, illustration techniques, lettering and typography, reproducing logos for print production, use color for advertising, and preparation of a professional portfolio. (Prerequisite: 10-111-103, Macintosh-Intro)

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-103, Macintosh-Intro)

10-111-142 GRAPHIC REPRODUCTION-ADVANCED ...various techniques used to print four-color process images including traditional and electronic separations; trapping, creating PDFs, proofing techniques; color correction; preparing files for flexo, gravure, and screen printing. (Prerequisite: 10-111-103, Macintosh-Intro)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-162 TYPOGRAPHY DESIGN/PAPER ...typography history; type styles and nomenclature; type in design world; type usage in printing; paper nomenclature; paper types; papers used for art, printing, and industry; and future of paper. (Prerequisite: 10-111-103, Macintosh-Intro)

10-111-199 MARKETING COMMUNICATIONS INTERN PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-152-185 WEBSITE CODING ...write code for functionality and design of web page text, hyperlinks, images, tables, and forms using (X)HTML and CSS. Apply and validate coding standards. Test browser function and user accessibility.

10-204-110 PUBLISHING TECHNOLOGIES ...introduction to printing process, electronic publishing, prepress operations, press operations, postpress operations, job logs, professional portfolios, and job seeking skills. (Corequisite: 10-111-103, Macintosh-Intro)

10-204-126 DIGITAL PRINT APPLICATIONS ...explain why the industry is in a state of transition towards digital printing, outline the proper time to select digital printing as a production tool; what type of project fits well into a digital print environment, identify what type of project fits the mold of digital printing.

Mechanical Design Technology
Program Code 106061
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Mechanical Design Technology prepares learners for employment as machine designers. Mechanical Design Technicians assist Product Engineers by detailing sections of the design. Detailing includes selecting standard parts such as bearings, couplings, and fasteners; sizing machine members; and preparing necessary documentation for detail and assembly drawings. Most of the work is done on a computer.

Program Outcomes
- Draw principal, auxiliary, and sectional views.
- Identify the general characteristics of metals, polymers, ceramics and composites.
- Apply lean manufacturing principles to component design.
- Analyze cost of components.
- Participate as a member of a manufacturing team.
- Evaluate material options and select materials for machine components.
- Use mechanical, architectural, metric and civil scales to plot scalable prints of drawings.
- Research information on the Internet.
- Maintain files on a personal computer.
- Operate word processing and spreadsheet programs.
- Analyze displacement, velocity and acceleration of machine members.
- Analyze stresses caused by forces acting on bodies at rest.
- Analyze forces acting on bodies at rest.
- Sketch orthographic and isometric views.
- Use catalogs or Internet sites to select standard components in machine design.
- Dimension mechanical drawings according to conventional ANSI Y14 standards and GDT standards.
- Draw weldments and sheet metal layouts.
- Create cams using a parametric modeler and CNC program.
- Calculate gear train ratios.
- Create basic models using a parametric modeler.
- Design simple mechanical devices.
- Draw detail and assembly drawings.
- Prepare electrical/electronic documentation for machine control.
- Understand application of electromechanical devices and servos.
- Display attitudes consistent with the profession.
- Work in an organized manner, documenting work performed.
- Use Machinery's Handbook as a reference source.
- Apply various manufacturing methods and techniques as they relate to Mechanical Design.

The following certificates/technical diplomas may be applied toward this program:
- 906061, CAD (Computer Aided Drafting)
- 906062, Parametric Modeling

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Detailer: produces detailed drawings of parts of machines from supplied information on CAD, and make drawing changes to comply with Engineering Change Notices (ECN's)/ Engineering Change Requests (ECR's).

Mechanical Design Technician: applies knowledge of mechanical engineering technology to design, develop, and test new or revised machinery; assists in component selection and sizing of machine members; has duties split between design and drafting and may specialize in a specific type of machine or product. Most work is performed on a computer.

Mechanical Drafter: has the principal duty of preparing working drawings of machinery and mechanical devices using CAD systems to draft detail and assembly drawings indicating dimensions and tolerances, materials, surface finishes, joining requirements, and other engineering data.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Mechanical Designer (Product Designer)
- Lead Designer
- Project Engineer
- Technical Sales/Service Representative

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 96; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Mechanical Design Technology on the College Math assessment is 50.
- A high school background in mathematics, science and industrial education.
- High school algebra or equivalent.
- The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

Curriculum
The Mechanical Design Technology Associate Degree is a two-year program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-606-111	Mechanical Design-Exploring	1
10-606-113	CAD	2
10-606-157	Solidworks Fund and Drawings	2
10-614-113	2D Essentials	2
10-801-196	Oral/Interpersonal Comm	3
10-804-118	Interm Algebra w Apps	4
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-442-153	Prototype Metal Fabrication	2
10-606-103	2D CAD - Advanced	3
10-606-122	CAD-Fabrication & Assembly	2
10-606-126	Geometric Dimension/Toleran	2
10-804-196	Trigonometry w Apps	3
10-806-154	General Physics 1	4
	SEMESTER TOTAL	16

THIRD SEMESTER
Catalog No.	Description	Credits
10-606-135	Machine Members-Strength	5
10-606-139	CAD-Electrical Control	3
10-606-158	Solidworks Advanced	3
10-606-159	Materials Science	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
	SEMESTER TOTAL	17

FOURTH SEMESTER
Catalog No.	Description	Credits
10-420-115	CNC-Mechanical Design	3
10-606-141	Design Problems	3
10-606-143	Mechanisms	3
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
	Elective	3
	SEMESTER TOTAL	18
	TOTAL CREDITS	68

SUGGESTED ELECTIVES
10-660-104, DC 1: Introduction
10-660-105, DC 2: Circuits
10-660-107, AC 1: Properties

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-115 CNC-MECHANICAL DESIGN ...2 axis CNC; 3 axis CNC; importing files; mold making. (Prerequisites: 10-606-113, CAD; 10-606-157, Solidworks Fund and Drawings)

10-442-153 PROTOTYPE METAL FABRICATION ...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication. (Corequisite: 10-606-122, CAD Fab & Assembly; OR 10-614-122, Prototype Design)

10-606-103 2D CAD-ADVANCED ...primary and successive auxiliary views; intersections and developments; intersections of planes and dihedral angles; piercing points; angles between lines and planes; revolutions; vectors. (Prerequisite: 10-606-113, CAD)

10-606-111 MECHANICAL DESIGN EXPLORING ...philosophy/organization/procedure of the Mechanical Design Technology Program, brief overview of the engineering profession by involvement in a design project to illustrate basic concepts/methods of machine design. (Prerequisite: Accepted into the Mechanical Design Technology program)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-122 CAD-FABRICATION & ASSEMBLY ...sheet metal drawings as applied to brackets, enclosures & guarding; welding drawings; threads & fasteners; stock components; working drawing documentation. (Prerequisite: 10-606-113, CAD)

10-606-126 GEOMETRIC DIMENSIONING/TOLERANCING ...review of standard dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. (Prerequisite: 10-606-113, CAD; OR 10-606-157, Solidworks Fund and Drawings OR 10-606-162, Solidworks Fundamentals)

10-606-135 MACHINE MEMBERS-STRENGTH ...force analysis, moments, truss and frame analysis, simple stress, properties of materials, joint design, centroids and moments of inertia, beam design, shafting design, combined stresses, columns. (Prerequisites: 10-806-154, General Physics 1; 10-804-196, Trigonometry w Apps)

10-606-139 CAD-ELECTRICAL CONTROL ...draw block and flow diagrams, logic diagrams; introduction to programmable control; fundamentals of electronics; motors and control circuits; sheet metal chassis and panel drawings. (Prerequisite: 10-606-113, CAD)

10-606-141 DESIGN PROBLEMS ...data gathering, mathematics, document standard practices, project management and teamwork. (Prerequisites: 10-606-126, Geometric Dimensioning/Tol; 10-606-135, Machine Members-Strength; 10-606-103, 2D CAD Adv; 10-606-158, Solidworks Adv OR 10-606-160, Solidworks Sheet Metal AND 10-606-166, Solidworks Loft & Surface)

10-606-143 MECHANISMS ...study of motion, vector equations and sense notation, basic motion concepts, kinematic drawing and displacement, velocities in mechanisms, accelerations in mechanisms, CAM motions, and gear trains. (Prerequisites: 10-806-154, General Physics 1; 10-606-113, CAD; 10-804-196, Trigonometry w Apps)

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ...terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, Solidworks drawing environment and fully dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical, OR 10-614-113, 2D Essentials Sketching-Technical; Prerequisite: Familiarity with Windows file management)

10-606-158 SOLIDWORKS ADVANCED ...sweeps, equations, configurations, draft, base and derived parts, assemblies, assembly drawings, auxiliary, section and special views, sheet metal, lofting, surfacing, and core and cavity. (Prerequisite: 10-606-157, Solidworks Fund and Drawings OR 10-606-163, Solidworks-Intermediate)

10-606-159 MATERIALS SCIENCE ...engineering materials, material selection, the relationship between material structure and properties, and failure analysis for design improvement. Materials covered include; metallic, polymeric, ceramic, and composite/exotic.

10-614-113 2D ESSENTIALS ...an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning. Knowledge integral to Model Building.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

Medical Assistant
Program Code 315091
Technical Diploma
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Medical Assistant program prepares individuals to be competent entry-level medical assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. The Medical Assistant program prepares individuals to assist physicians in their offices or other medical settings. Medical assistants perform a wide range of duties. The medical assistant is responsible for medical and surgical asepsis, taking vital signs, assisting the physician with examinations and surgery, administering ECGs and administering medications. The business/administrative duties include patient reception, appointment making, record keeping, filing, bookkeeping, insurance handling, typing medical correspondence and transcription and microcomputer applications. Laboratory functions include specimen collection, performance of basic laboratory tests and microscopic work. Graduates find jobs as medical assistants, secretaries, medical laboratory assistants, phlebotomists, receptionists, medical insurance clerks and electrocardiogram technicians.

Program Outcomes
- Perform medical office administrative functions.
- Provide patient care in accordance with regulations, policies, laws, and patient rights.
- Perform medical laboratory procedures.
- Demonstrate professionalism in a health care setting.
- Demonstrate safety and emergency practices in a health care setting.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Accreditation
The Medical Assistant program at NWTC is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org), upon the recommendation of the Medical Assisting Education Review Board (MAERB).
Commission on Accreditation of Allied Health
Education Programs
1361 Park Street
Clearwater, FL 33756
727/210-2350

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Medical Assistant: prepares a patient for examination or treatment, takes vital signs, performs simple lab tests, performs electrocardiograms, performs administrative functions, and assists the physician as needed within clinical procedures. Upon successful completion of the certification exam, Certified Medication Assistant status is obtained.

Medical Insurance Clerk: processes insurance claims on a computer.

EKG Technician: operates and maintains electrocardiographic machines, records the heart's electrical activity, and provides data for diagnosis and treatment of heart ailments by physicians.

Medical Laboratory Assistant: performs simple laboratory procedures and venipunctures to collect blood specimens.

Medical Records Clerk: handles all patient medical records in areas such as progress notes and pulls records of patients on a daily basis.

Medical Office Assistant: performs a variety of duties related to bookkeeping, typing, filing, record keeping, customer relations, telephoning, general correspondence, appointments, and patient accounts.

Phlebotomist: obtains blood specimens by venipuncture and capillary puncture.

Receptionist: greets patients, schedules appointments, and answers telephone.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Medical Laboratory Technician
- Medical Office Manager
- Medical Transcriptionist

Clinical Experience
Students will have on-the-job experience in area clinics during a five-week, full-time practicum during the second semester of the program. Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Board/Certification Examinations
- Graduates are eligible to take the national examination for Certified Medical Assistants.
- Felons are not eligible for the AAMA Certification Examination unless the Certifying Board grants a waiver based on one or more of the mitigating circumstances listed in the Disciplinary Standards.
- CMAs who are currently employed or seeking employment may not use the CMA (AAMA) credential unless their CMA is current. However, Certified Medical Assistants who are temporarily or permanently retired may continue to use the CMA (AAMA) credential for ceremonial purposes only. (Source: AAMA)

Flexible Learning Option
A part-time on-line and weekend track is available. This option is scheduled over a four-semester period, including one summer. For details, please refer to the part-time Medical Assistant brochure.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last three years. For a list of equivalents, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Typing proficiency of 25 words per minute (mandatory preadmission typing test to be taken at NWTC Assessment Center).

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in the program. Reading Comprehension: 64; Arithmetic: 55; Sentence Skills: 74. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory orientation.
- Complete physical examination within three months before entering program or beginning medical practicum and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Complete an American Heart Association Heart Saver First Aid course.

The following certificates/technical diplomas may be applied toward this program:
- 905012, Health Care Customer Service Representative
- 905011, Health Unit Coordinator

Curriculum

The Medical Assistant Technical Diploma is a one-year, two-semester, plus three-week program. Upon graduation, a student will have completed 32 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
* 10-501-101	Medical Terminology	3
* 10-501-107	Intro to Health Care Computing	2
* 31-509-301	Medical Asst Admin Procedures	2
* 31-509-302	Human Body in Health & Disease	3
* 31-509-303	Medical Asst Lab Procedures 1	2
* 31-509-304	Medical Asst Clin Procedures 1	4
	SEMESTER TOTAL	16

SECOND SEMESTER

Catalog No.	Description	Credits
* 10-501-104	Health Care Customer Serv.	2
* 31-509-305	Med Asst Lab Procedures 2	2
* 31-509-306	Med Asst Clin Procedures 2	3
* 31-509-307	Med Office Insurance & Finance	2
* 31-509-308	Pharm for Allied Health	2
* 31-509-309	Medical Law, Ethics & Profess	2
* 31-509-310	Medical Assistant Practicum	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	32

CURRICULUM NOTE

* No final grade lower than "C" is acceptable in any course marked with an asterisk. A student may repeat that particular course to achieve a "C" or better final grade in order to continue in or graduate from this program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-509-301 MEDICAL ASSISTANT ADMINISTRATIVE PROCEDURES ...introduces medical assistant students to office management, business administration and the electronic medical record (EMR) in the medical office. Students learn to schedule appointments, perform filing, record keeping, telephone and reception duties and communicate effectively with patients and other medical office staff, and keep an inventory of supplies. (Prerequisite: Accepted into Medical Assistant Program; Corequisite: 10-501-107, Intro to Healthcare Computing or any other computer course)

31-509-302 HUMAN BODY IN HEALTH & DISEASE ...focuses on diseases that are frequently first diagnosed and treated in the medical office setting. Students learn to recognize human body anatomy and the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases. (Prerequisite/Corequisite: 10-501-101 Medical Terminology)

31-509-303 MEDICAL ASSISTANT LABORATORY PROCEDURES 1 ...introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing. (Prerequisite: Accepted into Medical Assistant Program; Corequisite: 31-509-304 Medical Assistant Clinical Procedures 1)

31-509-304 MEDICAL ASSISTANT CLINICAL PROCEDURES 1 ...introduces medical assistant students to the clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting. (Prerequisite: Accepted into Medical Assistant Program; Corequisites: 10-501-101, Medical Terminology; 31-509-302, Human Body in Health and Disease; 31-509-303, Medical Asst Lab Prcoedures 1)

31-509-305 MEDICAL ASSISTANT LABORATORY PROCEDURES 2 ...prepares students to perform phlebotomy and CLIA waived hematology, chemistry, immunology, and laboratory procedures commonly performed by medical assistants in the ambulatory care setting. (Prerequisites: 31-509-303, Medical Assistant Lab Procedures 1, 10-501-101 Medical Terminology, 31-509-304 Medical Assistant Clinical Procedures 1, 31-509-302 Human Body in Health and Disease; Prerequisite/Corequisite: 31-509-306 Medical Assistant Clinical Procedures 2)

31-509-306 MEDICAL ASSISTANT CLINICAL PROCEDURES 2 ...prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting. (Prerequisites: 31-509-304, Medical Assistant Clinical Procedures 1, 31-509-303 Medical Assistant Lab Procedures 1, 31-509-302 Human Body in Health and Disease, 10-501-101 Medical Terminology; Co/Prerequisite: 31-509-308 Pharm for Allied Health; Corequisite: 31-509-305 Medical Assistant Lab Procedures 2)

31-509-307 MEDICAL OFFICE INSURANCE & FINANCE ...introduces medical assistant students to health insurance and finance in the medical office. Students perform bookkeeping procedures, apply managed care guidelines, and complete insurance claim forms. Students use medical coding and managed care terminology to perform insurance-related duties. (Prerequisites: 31-509-301, Medical Assistant Administrative Procedures; 31-509-302 Human Body in Health & Disease; 10-501-101, Medical Terminology; 10-501-107 Intro to Healthcare Computing (or any other computer course); Corequisites: 31-509-305 Medical Assistant Lab Procedures 2; 31-509-306, Medical Assistant Clinical Procedures 2; 31-509-308 Pharm for Allied Health)

31-509-308 PHARM FOR ALLIED HEALTH ...introduces students to classifying medications into correct drug categories and applying basic pharmacology principles. Students apply basic pharmacodynamics to identifying common medications, medication preparation, and administration of medications used by the major body systems. (Co/prerequisites: 10-501-101, Medical Terminology; 31-509-302, Human Body in Health and Disease)

31-509-309 MEDICAL LAW ETHICS & PROFESSIONALISM ...prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform quality improvement procedures, examine legal and bioethical issues, and demonstrate awareness of diversity.

31-509-310 MEDICAL ASSISTANT PRACTICUM ...requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. AAMA required practicum. (Prerequisite: Successful completion of all Medical Assistant courses)

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

Network Specialist-IT
Program Code 101502
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
Network Specialist-IT teaches students to design, install, configure, and maintain computer networks.

Program Outcomes
- Design a local area network (LAN) per specifications.
- Construct a local area network using the required physical components.
- Install network hardware including interface cards and cabling.
- Create effective user environments using Microsoft and UNIX/LINUX operating systems.
- Install and configure network and desktop operating system software.
- Install and configure application software.
- Design, implement, and maintain a secure network environment.
- Exercise structured problem solving techniques.
- Use word processing, spreadsheet, database, and presentation software appropriately.
- Develop technical documentation for network configuration and security.
- Communicate technical information effectively.
- Assess the impact of emerging technologies.
- Maintain microcomputer hardware and peripherals.
- Implement and configure wide area network (WAN) services.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- One year of high school algebra completed.
- User level familiarity with one or more computer operating environments.
- Ability to interact with a computer system (keyboarding or assist device).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. This will include an Algebra assessment. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 95; Arithmetic: 66; Sentence Skills: 89; Algebra: 86. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Network Support Specialist: designs and configures networks, installs hardware and software components, and maintains network performance.

Network Administrator: develops security procedures, assigns access rights, installs application software, and configures user profiles.

Successful completion of the course work in this program will also prepare a student to pursue vendor certification as a Network Engineer.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Cable Installer
- UNIX Administrator
- PC Support Specialist
- Help Desk Technician
- IS Certifications, such as MSCE, A+, Network+, and CCNA
- Network Analyst

The following certificates/technical diplomas may be applied toward this program:
- 901502, Networking
- 908094, Leadership in Human Relations

Curriculum
The Network Specialist-IT Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-103-141	Micro: Access-Intro	1
10-106-145	Keyboarding	1
10-150-163	IT:Network:Cisco 1	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-107-194	IT:Documentation	2
10-150-157	IT:Network:UNIX/LINUX-Intro	3
10-150-165	IT:Network:Microsoft Server 1	3
10-150-168	IT:Network:Cisco 2	3
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
	SEMESTER TOTAL	17

THIRD SEMESTER
Catalog No.	Description	Credits
10-150-145	IT:Network:Security Fund	3
10-150-186	IT:Network:Microsoft Server 2	4
10-150-188	IT:Network:Apps-Microsoft	4
10-809-172	Race Ethnic & Diversity	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	17

FOURTH SEMESTER
Catalog No.	Description	Credits
10-102-100	Bus and Info Tech Occup Prep	1
10-150-170	IT:Network:Capstone	2
10-150-173	IT:Newtork:Cisco 3	3
10-150-197	IT:Network:Apps-Linux	3
10-150-199	IT:Network: Intern Practicum	2
10-809-166	Intro to Ethics: Theory & App	3
	Elective	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

SUGGESTED ELECTIVES
IT:Network:Firewall Inst/Conf, 10-150-146
IT:Network:Computer Forensics, 10-150-169
IT:Program:Visual Basic, 10-152-163
IT:Support:Hardware-Advanced, 10-154-158

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-106-145 KEYBOARDING ...keyboarding at a personal productivity level, correct posture, touch typing on the alpha-numeric keyboard using an interactive software package running on a microcomputer. No experience required.

10-107-194 IT:DOCUMENTATION ...plan documentation content and delivery methods; develop online, context-sensitive written documentation, become familiar with ISO 9000 standards, package PDF files, and create compiled help modules. Proficiency using Word required. (Prerequisite: 10-801-136, English Composition 1 or equivalent)

10-150-145 IT:NETWORK:SECURITY FUNDAMENTALS ...examine common security vulnerabilities and defenses used to protect network resources. Included is a discussion of security policies, user awareness training, network monitoring, and secure network design. (Prerequisites: 10-150-157, IT:Network:UNIX/LINUX-Intro; 10-150-165, IT:Network:Microsoft Server 1; 10-150-168, IT:Network:Cisco 2)

10-150-157 IT:NETWORK:UNIX/LINUX-INTRO ...an introductory look at Unix/Linux administration and implementation. The learner will install, configure, and administer a Unix/Linux server, populate the system with users/groups, write scripts, and troubleshoot system failures. (Prerequisites: 10-150-163, IT:Network:Cisco 1 and 10-150-174, IT:Network:Client Operating Systems)

10-150-163 IT:NETWORK:CISCO 1 ...cable characteristics and termination, structured cabling systems, OSI reference model, IP addressing and subnetting, network architectures and basic protocols, Ethernet switches, basic router operation and configuration.

10-150-165 IT:NETWORK:MICROSOFT SERVER 1 ...Microsoft Server OS administration and implementation. Learner will install and configure the OS, Active Directory, Group Policies, IIS and security. Exam objectives for the Microsoft's 70-290 exam are addressed. (Prerequisite: 10-150-174, IT:Network:Client Operating Systems)

10-150-168 IT:NETWORK:CISCO 2 ...basic routing and packet-forwarding concepts; understanding, configuring and troubleshooting dynamic routing protocols; IP addressing with VLSM; static routes. (Prerequisite: 10-150-163, IT:Network: Cisco 1)

10-150-170 IT:NETWORK:CAPSTONE ...individual case studies to review and consolidate the knowledge and skills gained in previous classes. Course is intended to be taken during the student's last semester. (Prerequisites: 10-150-145, IT:Network:Security Fundamentals; 10-150-186, IT:Network:Microsoft Server 2; 10-150-188, IT: Network:Applications)

10-150-173 IT:NETWORK:CISCO 3 ...layer 2 & 3 switching, switch configuration, management and security, configure and manage VLANs, trunking, inter-VLAN routing, access control lists and other advanced Cisco topics. (Prerequisite: 10-150-168, IT:Network:Cisco 2)

10-150-174 IT:NETWORK:CLIENT OPERATING SYSTEMS ...basic OS functions; memory, CPU, device/file management techniques, OS installation/configuration; configuration of I/O and storage devices; basic network connectivity; standard system maintenance procedures; command line introduction and batch file writing.

10-150-186 IT:NETWORK:MICROSOFT SERVER 2 ...remote workstation installation and administration, DHCP, DNS, IPsec, and VPN. Enterprise software deployment, Terminal Services, multi domain management and migration. Administration scripting, performance monitoring, and network security. (Prerequisites: 10-150-165, IT:Network:Microsoft Server 1; 10-150-168, IT:Network:Cisco 2)

10-150-188 IT:NETWORK: APPLICATIONS-MICROSOFT ...fundamentals of project management, software installation in a network environment, application launching options, application and data security, Groupware applications, Network utility software, and effective user support. (Prerequistes: 10-150-165, IT:Network:Microsoft Server 1; 10-150-168, IT:Network:Cisco 2)

10-150-197 IT:NETWORK: APPLICATIONS-LINUX ...designing, implementing, and securing various network applications and services in a Linux-based network including, Web, Email, Infrastructure, and Database services. These services will be implemented using both physical and virtualized Linux servers. (Prerequisite: 10-150-157, IT:Network:UNIX/LINUX-Intro)

10-150-199 IT:NETWORK: INTERN PRACTICUM ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-154-150 IT:SUPPORT:HARDWARE-INTRO ...computer network terminology, component identification, POST, computer/peripheral configuration and maintenance, basic operating systems concepts and installations, basic networking concepts and configurations and troubleshooting using the Cisco IT Essentials curriculum.

Nuclear Technology
Program Code 106241
Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Lakeshore Technical College.

Program Description

The Nuclear Technology program is designed to respond to today's world and its demand for nuclear technicians. This demand is expected to remain high for years to come. The Nuclear Technology program offers the student a unique opportunity to obtain the specialized training in demand by businesses and organizations licensed to utilize radioactive materials. This program can result in starting salaries higher than many four-year degree programs. It is also an excellent springboard for a four-year degree in the high-demand field of health physics and radiation safety.

Program Outcomes

- Work safely within industrial and radiological hazard areas.
- Understand and communicate nuclear technology-related concepts effectively in both oral and written formats.
- Diagnose equipment requiring electrical or mechanical repair and carry out preventive maintenance procedures.
- Perform radiological surveys for radiation and radioactive contamination.
- Follow procedures for operating and maintaining systems and equipment at nuclear facilities.
- Participate in applying nuclear technologies to a variety of industrial, medical, and research processes.
- Apply your knowledge in a variety of related occupational jobs, such as in reactor plant operations, maintenance, and quality assurance.

Requirements for Program Entry

Completed application at Lakeshore Technical College. Go to www.gotoltc.edu or call (888) 468-6582.

Employment Potential

- Nuclear Power Facilities
- Radioactive Waste Handling Facilities
- Radiopharmaceutical Companies
- Universities and National Laboratories
- Medical Facilities
- U.S. Department of Energy Sites
- Hospitals
- Emergency Management

About Shared Programs

- NWTC will offer in-person courses at the Green Bay campus, with the following exceptions: courses denoted with (*) are delivered to NWTC from LTC via ITV/VC; courses denoted with (**) are offered only at LTC.
- Contact Lakeshore Technical College for all benchmark scores.

Curriculum

The Nuclear Technology Associate Degree is a two-year, six-semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus and will take part in ITV/VC classes sent from LTC to NWTC. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
* 10-624-105	Health Physics Calc & Stats	3
* 10-624-110	Nuclear Technology and Regs	3
* 10-660-105	DC Fundamentals	3
10-804-118	Interm Algebra w Apps	4
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

SECOND SEMESTER

* 10-624-114	Nuclear Systems/Sources	3
* 10-624-122	Radiation Physics	3
* 10-624-123	Radiation Physics-Lab	2
** 10-660-110	AC Fundamentals	3
** 10-620-157	Hydraulics Industrial	2
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	16

SUMMER SEMESTER

* 10-624-118	Radiation Biology	3
10-806-134	General Chemistry	4
	SEMESTER TOTAL	7

THIRD SEMESTER

* 10-624-132	Radiological Emergencies	2
* 10-624-133	Radioactive Material Mgmt	2
* 10-624-134	Radiation Shielding	2
* 10-624-135	Radiation Shield-Lab	1
** 10-624-149	Reactor Plant Comp	4
10-806-154	General Physics 1	4
10-809-122	Intro to Amer Govt	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

* 10-624-145	Applied Health Physics	3
** 10-624-156	Nuclear Technology Internship	2
	OR	
* 10-624-146	Applied Physics-Lab	2
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	8

SUMMER SEMESTER

** 10-624-148	Reactor Theory and Operations	3
	SEMESTER TOTAL	3
	TOTAL CREDITS	68

Updates to Curriculum Information

Visit **www.nwtc.edu/academics/Pages/home.aspx** for updates after the time of publication.

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-620-157 HYDRAULICS – INDUSTRIAL ...prepares the learner to identify hydraulic component symbols; adjust a pressure relief valve; analyze the operation of a pilot operated relief valve; analyze Pascal's law; evaluate flow, velocity, work and power in industrial hydraulic circuits; analyze meter-in, meter-out, and bypass flow control circuits; evaluate the characteristics of hydraulic pumps, motors; directional and control valves; identify basic hydraulic control valves; and assemble hydraulic circuits. (Prerequisites: Math equivalency requirements met or 31-457-318, Trades Math Industrial Maintenance and 31-457-318T1, Trades Math Industrial Maintenance 1, 31-457-318T2, Trades Math Industrial Maintenance 2)

10-624-105 HEALTH PHYSICS CALCULATIONS AND STATISTICS ...prepares the learner to solve linear and exponential equations, logarithms, plot graphs, determine counting statistics and reliability, and work with geometry and trigonometry problems.

10-624-110 NUCLEAR TECHNOLOGY AND REGULATIONS ...introduces the learner to atomic and nuclear structure; radioactivity and half-life; regulations standards; and Title 10 Parts 19, 20, 30 and 35 of the Code of Federal Regulations.

10-624-114 NUCLEAR SYSTEMS AND SOURCES ...introduces the learner to the major components of accelerators, lasers, isotope generators, nuclear gauging devices, X-ray tubes, nuclear reactors, and natural/background sources and the radiation hazards associated with them.

10-624-118 RADIATION BIOLOGY ...prepares the learner to convert measuring units and activity to dose rates, predict the effect of radiation on living cells and human organs, evaluate radiation risk, and calculate internal doses. (Prerequisites: 10-624-110, Nuclear Tech/Reg &; 10-624-105, Hlth Phys Calc/Stats &; 10-624-114, Nuclear Syst/Sources &; 10-624-122, Rad Phys &; 10-624-123, Rad Phys-Lab or 10-624-123C2, Rad Physics &; 10804118, Interm Alg w Apps)

10-624-122 RADIATION PHYSICS ...introduces the learner to health physics-related physics, properties of radiation, detection and measuring radiation, and gas-filled and solid-state detectors.

10-624-123 RADIATION PHYSICS-LAB ...expands the learner's ability to perform calculations, select instruments, and analyze samples. This course is associated with 10-624-122, Radiation Physics.

10-624-132 RADIOLOGICAL EMERGENCIES ...prepares the learner to plan and assist in emergencies involving radioactive material and radiation by calculating projected doses, collecting environmental samples, following emergency plans, and managing affected personnel. (Prerequisites: 10-624-110, Nuclear Technology and Regulations and; 10-624-105, Health Physics Calculations and Statistics and; 10-624-114, Nuclear Systems and Sources)

10-624-133 RADIOACTIVE MATERIAL MANAGEMENT ...introduces the learner to the proper methods used to dispose of radioactive waste in liquid, solid, gaseous forms; determine waste classification, package/label requirements, proper type of transport container, shipment quantity classification, storage distance for people and film during shipments by rail/vessel/public roads, proper shipping name and UN number; completion of proper shipping papers; document materials inventory/shipments; evaluate methods used to process low level and high level waste.

10-624-134 RADIATION SHIELDING ...provides the learner with the skills to calculate radiation attenuation from various geometric radioactive sources, determine the effect of neutron radiation on materials, and estimate the exposure rate from various sources. (Prerequisite: 10-624-122, Radiation Physics)

10-624-135 RADIATION SHIELD - LAB ...expands the learner's ability to perform shielding of ionizing radiation sources and to measure the penetration of alpha beta and gamma radiation.

10-624-145 APPLIED HEALTH PHYSICS ...prepares the learner to issue dosimetry, calculate neutron dose, monitor personal exposure, calculate radioactive airborne activity concentration, estimate radioactive, airborne concentration, issue respirators, determine contamination levels, recommend protective clothing, reduce the spread of contamination, conduct an ALARA audit, reduce the total radiation exposure, maintain records and estimate exposure to internal organs. (Prerequisite: 10-624-122, Radiation Physics)

10-624-146 APPLIED HEALTH PHYSICS-LAB ...expands the learner's ability to perform applied health physics tasks as covered in Applied Health Physics, 10-624-145. This course is associated with 10-624-145.

10-624-148 REACTOR THEORY AND OPERATIONS ...introduces the learner to the basic reactor types, the fission process, reactivity/criticality, reactor kinetics, heat removal, residual/decay heat, basic reactor types, nuclear plant water chemistry, and reactor thermodynamics. (Prerequisite 10-624-122, Radiation Physics)

10-624-149 REACTOR PLANT COMPONENTS ...introduces basic mechanical and electrical components used by nuclear power plants such as different types of piping, valves, pumps, ejectors, filters, turbines, heat exchangers, compressors, lubrication systems, valve actuators, breakers, transformers, relays, and other equipment. (Prerequisites: 10-624-110, Nuclear Technology and Regulations and 10-624-105, Health Physics Calculations & Statistics and 10-804-118, Intermediate Algebra w Applications and Corequisite: 10-624-114, Nuclear Systems and Sources)

10-624-156 NUCLEAR TECHNOLOGY INTERNSHIP ...internship enhances the student's ability to apply technical skills to work productively, communicate effectively, and demonstrate appropriate ethics and behavior in a professional workplace environment.

10-660-105 DC FUNDAMENTALS ...prepares the student to follow safety procedures; maintain a safe and healthy work environment; convert values to scientific and engineering notations; calculate math quantities; describe basic atomic theory; identify basic electrical terms; use established symbols standards; describe DC voltage characteristics and current sources and electrical resistance; measure and analyze electrical quantities in series and parallel circuits; and desolder/solder single and multi-lead components.

10-660-110 AC FUNDAMENTALS ...prepares the student to analyze electrical circuits using phasers and AC math, analyze AC waveforms, measure and analyze AC power, analyze capacitors and inductors in DC and AC circuits, analyze AC circuits containing reactance and calculate resonance, apply the elements and properties of basic measuring circuits, and describe transformer characteristics. (Prerequisites: 10-660-105, DC Fundamentals or 10-660-105C1, DC Fundamentals or 10-605-105, DC Fundamentals or 10-605-105C1, DC Fundamentals)

Nursing Assistant

Program Code 305431

Technical Diploma

This program is *not* eligible for financial aid.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Nursing Assistants assist in providing care of sick or injured patients under the supervision of the nursing and/or medical staff.

Program Outcomes

- Apply for competency testing to be placed on the Wisconsin Nurse Aide Registry.
- Obtain employment as a Nursing Assistant.
- Display behavior which supports and promotes residents' rights.
- Perform basic nursing/personal care skills.
- Assist residents in attaining and maintaining independence.
- Interact effectively with residents experiencing dementias.
- Interact on a one-to-one-basis with residents, with sensitivity to their emotional, social, and mental health.

Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students.
- Requirements for program entry must be completed prior to the start of program.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.
- Be at least 16 years old.
- Have a medical examination satisfactorily completed within one year before entering program to include TB skin testing.
- Provide documentation of immunization history.
- Class requirements include work on the Internet and DVD viewing. Access to high speed Internet and a DVD player is highly recommended.
- Push, pull, lift, and/or support up to 50 pounds of weight.
- Prior to registering for class, meeting Functional Abilities Inventory requirements (accessible at www.nwtc.edu).

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Nursing Assistant: performs basic nursing tasks under the supervision and direction of the Registered Nurse in a nursing home, home health environment, or hospital setting.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Note

- All textbook, workbook and Blackboard® assignments must be completed before attending clinical.
- This course is completed within six to eight weeks and will meet at least one to two days a week.
- Classroom and clinical attendance is mandatory
- Any missed classroom and clinical hours must be made up.
- Individuals with abuse records may not be eligible for employment.

Clinical Experience

Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances to meet clinical requirements.

Curriculum

The Nursing Assistant Technical Diploma is a 120-hour program that includes skill pre-work, lecture, lab and clinical. Upon graduation, a student will have completed three credits. Orientation will be held during the first class session.

FIRST SEMESTER

Catalog No.	Description	Credits
30-543-300	Nursing Assistant	3
	SEMESTER TOTAL	3
	TOTAL CREDITS	3

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTION
This course provides an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-543-300 NURSING ASSISTANT
...basic nursing/personal care skills, principles of communication skills, resident rights and team work with other care givers under the supervision of a licensed nurse. (Prerequisite: Accepted into the Nursing Assistant program.)

Nursing-Associate Degree
Program Code 105431
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. The first year of the program is also offered at the West Regional Learning Center-Shawano. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. For information in Shawano: (715) 524-2418. Toll-Free: (888) 385-6982.

Program Description
Graduates plan, provide, and evaluate patient care. They act as liaisons between physicians, other health care workers, and the patient. They supervise other health care providers.

Program Outcomes
- Adhere to professional standards of practice within legal, ethical, and regulatory frameworks of the registered nurse.
- Use effective communication skills incorporating lifespan considerations.
- Assess health of individuals, families, and groups across the lifespan within the context of the community.
- Make clinical decisions to ensure safe and accurate nursing care.
- Provide safe, caring interventions with diverse populations across the lifespan.
- Collaborate with others to respond to the needs of individuals, families, and groups across the health-illness continuum.
- Manage care to facilitate continuity within and across health care settings.
- Use teaching and learning processes to promote and restore health incorporating lifespan considerations.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Accreditation
The Nursing-Associate Degree program is accredited by:
National League for Nursing Accrediting Commission (NLNAC)
3343 Peachtree Road, NE, Suite 850
Atlanta, GA 30326
(212) 363-5555 FAX: (212) 812-0391

The Nursing-Associate Degree program is approved by:
Wisconsin Board of Nursing
Dept. of Regulation & Licensing
1400 East Washington St.
P.O. Box 8935, Madison, WI 53708-8935
(608) 266-2112

Employment Potential
A graduate of this program who becomes a Registered Nurse in a variety of health care settings will have the potential for employment in the following areas:
STAFF NURSE: is responsible for making nursing diagnoses and treating human responses to actual and potential health problems in health care facilities and insurance areas.
CHARGE NURSE: assumes the same responsibilities of a Registered Nurse in addition to directing the work flow and coordinating and managing the provision of care of patients and other staff in a medical facility.

Board/Certification Examinations
Graduates are eligible to take the NCLEX-RN Examination for licensure as a Registered Nurse (RN).

After completion of second semester, students are eligible to take the NCLEX-PN for licensure as a Practical Nurse.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program application, an Academic Skills Assessment (Accuplacer) or ACT assessment with appropriate benchmark scores is necessary within the last three years. Academic Skills Assessment program benchmarks of Reading Comprehension: 90; Arithmetic: 80; Sentence Skills: 95, or minimum standard composite score of 22 on ACT (minimum of math 18, reading 21, sentence skills 21), must be met prior to submitting an application. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- One year of Biology and Chemistry, passed with a "C" grade or better. If in high school, "C" in two semesters of each.
- Applicants with documentation of completion of Introduction to Biochemistry with a "B" or better, will receive priority standing among that year's applicant pool.

Requirements for Program Entry
- Attend mandatory orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements. Recommended completing between program orientation and program start.
- All students must successfully complete a DHS approved Nursing Assistant course prior to program entry.

Note
- Graduates are eligible to apply for direct transfer of credit in the nursing programs at the University of Wisconsin and private colleges and universities.
- Individuals with criminal records may be ineligible for licensure. Individuals with abuse records may be ineligible for employment in nursing homes.
- Licensed Practical Nurses may receive advanced standing for nursing courses in the first year of the program.

Curriculum
The Nursing-Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 70 credits.

PRE-SEMESTER

	Catalog No.	Description	Credits
*	10-806-186	Intro to Biochemistry	4
		SEMESTER TOTAL	4

FIRST SEMESTER

	Catalog No.	Description	Credits
*	10-543-101	Nursing Fundamentals	2
*	10-543-102	Nursing Skills	3
*	10-543-103	Nursing Pharmacology	2
*	10-543-104	Nsg: Intro Clinical Practice	2
	10-801-136	English Composition 1	3
++	10-806-177	Gen Anatomy & Physiology	4
	10-809-188	Developmental Psychology	3
		SEMESTER TOTAL	19

SECOND SEMESTER

	Catalog No.	Description	Credits
*	10-543-105	Nursing Health Alterations	3
*	10-543-106	Nursing Health Promotion	3
*	10-543-107	Nsg: Clin Care Across Lifespan	2
*	10-543-108	Nsg: Intro Clinical Care Mgt	2
	10-801-196	Oral/Interpersonal Comm	3
++	10-806-179	Adv Anatomy & Physiology	4
		SEMESTER TOTAL	17

THIRD SEMESTER

	Catalog No.	Description	Credits
*	10-543-109	Nsg: Complex Health Alterat 1	3
*	10-543-110	Nsg: Mental Health Comm Con	2
*	10-543-111	Nsg: Intermed Clin Practice	3
*	10-543-112	Nursing Advanced Skills	1
*	10-806-197	Microbiology	4
	10-809-198	Intro to Psychology	3
		SEMESTER TOTAL	16

FOURTH SEMESTER

	Catalog No.	Description	Credits
*	10-543-113	Nsg: Complex Health Alterat 2	3
*	10-543-114	Nsg: Mgt & Profess Concepts	2
**	10-543-115	Nsg: Adv Clinical Practice	3
*	10-543-116	Nursing Clinical Transition	2
	10-809-196	Intro to Sociology	3
		Elective	1
		SEMESTER TOTAL	14
		TOTAL CREDITS	70

CURRICULUM NOTE

* No final grade lower than a "C" is acceptable in the nursing or natural science courses marked with an asterisk. A student must repeat the particular course with "C" or better final grade to continue in or graduate from this program. If the course is sequential, the successful retake must occur before continuing the sequence.

++ No final grade lower than a "B" is acceptable in General or Advanced Anatomy & Physiology. A student must repeat the particular course with a "B" or better final grade to continue in the program. If the course is sequential, the successful retake must occur before continuing the sequence.

** Must complete 10-543-115, Advanced Clinical Practice, with a "C" or better prior to the start of 10-543-116, Clinical Transition

Flexible Learning Option
A part-time evening/weekend track is available. This option is scheduled over a ten-semester, four-year period, including three summers. For details, please refer to the Part-time Nursing-Associate Degree brochure.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-543-101 NURSING FUNDAMENTALS ...focuses on basic nursing concepts that the beginning nurse will need to provide care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients with alterations in cognition, elimination, comfort, grief/loss, mobility, integument, and fluid/electrolyte balance. (Prerequisite: Accepted into Nursing-AD Program; Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-102 NURSING SKILLS ...focuses on development of clinical skills and physical assessment across the lifespan. Content includes mathematic calculations and conversions related to clinical skills, blood pressure assessment, aseptic technique, wound care, oxygen administration, tracheostomy care, suctioning, management of enteral tubes, basic medication administration, glucose testing, enemas, ostomy care, and catheterization. In addition the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach. (Prerequisite: Accepted into Nursing-AD Program; Corequisites: 10-806-177, Gen Anatomy & Physiology; 10-543-101, Nursing Fundamentals; 10-543-103, Nursing Pharmacology; 10-543-104, Nursing Intro to Clin Practice)

10-543-103 NURSING PHARMACOLOGY ...this course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisite: Accepted into Nursing-AD Program; Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-104 NURSING: INTRO TO CLINICAL PRACTICE ...this introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisite: Accepted into Nursing-AD Program; Corequisites: 10-806-177, Gen Anatomy & Physiology; 10-543-101, Nursing Fundamentals; 10-543-102, Nursing Skills; 10-543-103, Nursing Pharmacology)

10-543-105 NURSING HEALTH ALTERATIONS ...this course elaborates upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of the clients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply therapeutic nursing interventions. It will also introduce concepts of leadership, team building, and scope of practice. (Prerequisite: Completion of 1st semester coursework; Corequisites: 10-543-108, Nursing:Intro to Clin Manag; 10-806-179, Advanced Anatomy & Physiology)

10-543-106 NURSING HEALTH PROMOTION ...this course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyle choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development. (Prerequisite: Completion of 1st semester coursework; Corequisite: 10-543-107, Nursing:Clin Care Life Span; 10-806-179, Advanced Anatomy & Physiology)

10-543-107 NURSING CLINICAL CARE ACROSS LIFESPAN ...this clinical experience applies nursing concepts and therapeutic interventions to clients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extending care to include the family is emphasized. (Prerequisite: Completion of 1st semester coursework; Corequisites: 10-543-106, Nursing Health Promotion; 10-806-179, Advanced Anatomy & Physiology)

10-543-108 NURSING: INTRO TO CLINICAL CARE MANAGEMENT ...this clinical experience applies nursing concepts and therapeutic nursing interventions to groups of clients across the lifespan. It also provides an introduction to leadership, management, and team building. (Prerequisite: Completion of 1st semester coursework; Corequisites: 10-543-105, Nursing Health Alterations; 10-806-179, Advanced Anatomy & Physiology)

10-543-109 NSG: COMPLEX HEALTH ALTERATIONS 1 ...prepares the learner to expand knowledge from previous courses in caring for clients across the lifespan with alterations in cardiovascular, respiratory, endocrine, and hematologic systems as well as clients with fluid/electrolyte and acid-base imbalance, and alterations in comfort. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-543-110, Nsg: Mental Health; 10-543-111, Nsg:Intermediate Clin Practice; 10-543-112, Nsg: Advanced Skills; 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-110 NURSING: MENTAL HEALTH COMMUNITY CONCEPTS ...this course will cover topics related to the delivery of community and mental health care. Specific health needs of individuals, families, and groups will be addressed across the lifespan. Attention will be given to diverse and at-risk populations. Mental health concepts will concentrate on adaptive/maladaptive behaviors and specific mental health disorders. Community resources will be examined in relation to specific types of support offered to racial, ethnic, economically diverse individuals and groups. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-543-109, Nsg: Comp Health Alt 1; 10-543-111, Nsg:Intermediate Clin Practice; 10-543-112, Nsg: Advanced Skills; 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-111 NURSING: INTERMEDIATE CLINICAL PRACTICE ...this intermediate level clinical course develops the RN role when working with clients with complex health care needs. A focus of the course is developing skills needed for managing multiple clients and priorities across the lifespan. Using the nursing process, students will gain experience in adapting nursing practices to meet the needs of clients with diverse needs and backgrounds. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-543-109, Nsg: Comp Health Alt 1; 10-543-110, Nsg:Mental Hlth Concepts; 10-543-112, Nsg: Advanced Skills; 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-112 NURSING ADVANCED SKILLS ...this course focuses on the development of advanced clinical skills across the lifespan. Content includes advanced IV skills, blood product administration, chest tube systems, basic EKG interpretation and nasagastric/feeding tube insertion. (Prerequisite: Completion of 2nd semester coursework)

10-543-113 NURSING: COMPLEX HEALTH ALTERATIONS 2 ...prepares the learner to expand knowledge and skills from previous courses in caring for clients across the lifespan with alterations in the immune, neurosensory, musculoskeletal, gastrointestinal, hepatobiliary, renal/urinary and the reproductive systems. The learner will also focus on management of care for clients with high-risk perinatal conditions, high-risk newborns and the ill child. Synthesis and application of previously learned concepts will be evident in the management of clients with critical/life threatening situations. (Prerequisite: Completion of 3rd semester coursework; Corequisites: 10-543-114, Nsg:Mgt & Profess Concepts; 10-543-115, Nursing Advanced Clinical Practice; 10-543-116 Nursing Clinical Transition)

10-543-114 NURSING: MANAGEMENT/PROFESSIONAL CONCEPTS ...this course covers nursing management and professional issues related to the role of the RN. Emphasis is placed on preparing for the RN practice. (Prerequisite: Completion of 3rd semester coursework; Corequisites: 10-543-113, Nsg Complex Health Alterat 2; 10-543-115, Nursing Advanced Clinical Practice; 10-543-116, Nursing Clinical Transition)

10-543-115 NURSING: ADVANCED CLINICAL PRACTICE ...this advanced clinical course requires the student to integrate concepts from all previous courses in the management of groups of clients facing complex health alterations. Students will have the opportunity to further develop critical thinking skills using the nursing process in making clinical decisions. Continuity of care through interdisciplinary collaboration is emphasized. (Prerequisite: Completion of 3rd semester coursework; Corequisites: 10-543-113, Nsg: Complex Health Alterat 2; 10-543-114, Nsg: Mgt & Profess Concepts)

10-543-116 NURSING CLINICAL TRANSITION ...this clinical experience integrates all knowledge learned in the previous courses in transitioning to the role of the graduate nurse. The course promotes relatively independent clinical decisions, delegation, and works collaboratively with others to achieve client and organizational outcomes. Continued professional development is fostered. (Prerequisite: Completion of 3rd semester coursework; Corequisites: 10-543-115, Nsg: Adv Clinical Practice; 10-543-113, Nsg:Complex Health Alterat 2; 10-543-114, Nursing Management Concepts)

Office Professional
Program Code 311061
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Office Professional students are prepared for entry-level office positions. Skills are developed in word processing, spreadsheet, presentation graphics, database, document creation, telephone messaging, records management, office procedures, and keyboarding. Credits earned in the program can be applied toward the Software Level 1 and/or Software Level 2 certificates and the Administrative Professional Associate Degree program.

Program Outcomes

- Communicate business messages effectively.
- Prioritize and manage workflow.
- Select appropriate technology to perform office tasks and manage information.
- Use efficient techniques and appropriate resources in a business environment.
- Plan events, travel, conferences, and meetings.
- Research, analyze, and present information.
- Integrate appropriate software to produce effective business documents.
- Demonstrate professionalism in a business environment.
- Contribute to team process using leadership principles.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Basic math.
- A minimum keyboarding skill of 20 words per minute using the touch method is recommended.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 66; Arithmetic: 41; Sentence Skills: 76. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Office Professional: performs a variety of duties related to keyboarding, filing, transcribing, word processing, telephoning, making appointments, recordkeeping, setting up meetings, handling customer relations, entering data, and handling incoming and outgoing mail.

Records Coordinator: works in offices with a great volume of records in which indexing, cross-referencing, filing, retrieving, and charging-out records are important job functions.

Front Desk Coordinator: manages the company's lobby area; greets and directs all visitors, including vendors, clients, job candidates and customers; ensures completion of paperwork, sign-in and security procedures; handles special administrative projects, as well as overflow work from department and executive assistants; depending on the size of the firm, also may answer incoming calls.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Administrative Professional
- Executive Assistant
- Team Leader
- Office Manager

The following certificates/technical diplomas may be applied toward this program:

901031, Software Level 1

Curriculum

The Office Professional Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-111	Micro: Windows-Intro	1
10-103-121	Micro: Word-Intro	1
10-103-122	Micro: Word-Part 2	1
10-103-151	Micro: PowerPoint-Intro	1
10-106-103	Info Process Principles	3
10-106-107	Keyboard-Speed Building 1	1
10-106-112	Keyboard-Speed Building 2	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-106-126	Admin Business Procedures 1	2
10-106-132	Proofreading/Editing Essen 2	2
10-106-142	Software Projects	3
10-106-143	Business Experience-Applied	1
10-106-152	Records Management	2
10-106-172	Telephone/Messaging Skills	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	34

CURRICULUM NOTE

Portfolio: Students are required to complete a program portfolio prior to graduation.

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; text flow; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. Requires strong introductory Word skills or Word-Intro.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-106-103 INFORMATION PROCESSING PRINCIPLES ...information processing cycle and workflow, terminology, hardware, software, networks, digital media, ergonomics, security, systems, Internet, and career opportunities.

10-106-107 KEYBOARD-SPEED BUILDING 1 ...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic speed developed is 40 wpm in a 3-minute timing. Requires touch keyboarding at 30 wpm.

10-106-112 KEYBOARD-SPEED BUILDING 2 ...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic speed developed is 45 wpm in a 5-minute timing. Requires touch keyboarding at 40 wpm.

10-106-126 ADMINISTRATIVE BUSINESS PROCEDURES 1 ...today's global business environment includes time management using software tools, flexible work arrangements, processing mail, meeting coordination, copiers and fax machines, and application of common business communication using appropriate formats. Requires Windows, intermediate Word, PowerPoint, and Outlook experience. (Prerequisite: 10-106-131, Proofreading/Editing Essentials 1; Corequisite: 10-106-142, Software Projects)

10-106-131 PROOFREADING/EDITING ESSENTIALS 1 ...develop skills for using, identifying, and correcting grammar, spelling, punctuation, capitalization, number usage and abbreviations for creating error-free business documents. Introduction and use of reference manuals/resources and portfolio guidelines. (Touch keyboarding and basic word processing skills are assumed.)

10-106-132 PROOFREADING/EDITING ESSENTIALS 2 ...apply advanced proofreading and editing skills in electronic and printed business documents using Proofamatics technique, transcription equipment, reference manuals, and resources. Multitasking and decision-making skills are enhanced through transcription and proofreading. (A passing grade in Proofreading/Editing Essentials 1 is a strong recommendation for success.)

10-106-142 SOFTWARE PROJECTS ...applying Windows and Word features to manage and format business documents while exercising decision-making, increasing efficiency, and enhancing keyboarding skills. Requires Windows, advanced Word background, and minimum 40 wpm keyboarding skill.

10-106-143 BUSINESS EXPERIENCE-APPLIED ...completing a portfolio, studying job search skills, and participating in a field experience. Course should be taken during the last semester. All required classes for the Office Professional program must be completed or in progress.

10-106-152 RECORDS MANAGEMENT ...major systems of filing classification: alphabetic, numeric, geographic and subject; retention and disposition of records; records equipment and technology.

10-106-153 PROFESSIONAL PROFILE ...developing a professional image and attitude, including study of business ethics and etiquette; goal setting; anger, stress, and time management; understanding of diverse cultures; and development of platform skills.

10-106-172 TELEPHONE/MESSAGING SKILLS ...using the telephone effectively and efficiently in the world of work; telephone etiquette, messaging, and voice mail.

Paralegal
Program Code 101101
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
A Legal Assistant or Paralegal is a person qualified by education, training, or work experience who is employed or retained by a lawyer, law office, corporation, governmental agency, or other entity who performs specifically designated substantive legal work for which a lawyer is responsible. Paralegals are not authorized to practice law. Remediation will be strongly recommended for those students not meeting the program benchmarks.

Program Outcomes
- Communicate effectively orally and in writing within the context of a legal environment.
- Work collaboratively while demonstrating professionalism, individual initiative and responsibility.
- Apply ethical principles and critical thinking skills to solve problems in a legal environment.
- Effectively organize legal information.
- Conduct accurate, effective and efficient legal research using both traditional and computerized research techniques.
- Generate work product in various fields of law, using computer software applications typical in a modern legal environment.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Ability to use Windows and Microsoft Word proficiently.
- Successful completion of reading and language assessment prior to admission.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 66; Sentence Skills: 95. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Credentials
The Paralegal Program is approved by the American Bar Association (ABA) and is also a member of the American Association for Paralegal Education.
American Bar Association
541 North Fairbanks Ct.
Chicago, IL 60611
Phone: (312) 988-5617

Employment Potential
A graduate of this program will have the potential for employment as a Paralegal or Legal Assistant. Paralegals are not authorized to practice law. Paralegals perform work under the supervision of a lawyer in a variety of settings. A graduate may be employed by a private law firm; insurance company, corporation, bank, private business; legal clinic; agency of the federal, state, or local government; legal service or legal aid office; law departments; special interest group or association; criminal law office; service company or consulting firm.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Law Office Administrator
- Law Office Manager
- Paralegal Supervisor
- Paralegal Instructor
- Corporate Compliance Officer
- Regulatory Specialist
- Research Analyst

The following certificates/technical diplomas may be applied toward this program:
908094, Leadership in Human Relations

A Special Note to Learners Holding a Bachelor's Degree
Learners holding a bachelor's degree from an accredited institution have the option of pursuing a Post-Baccalaureate Certificate for Paralegal. For more information, contact Enrollment Services at 888-385-6982.

A Special Note to Those Learners Taking Online Courses
The ABA requires each learner to take a minimum of four legal specialty courses in a live, synchronous "real time" format.

* NWTC requires you to take Civil Litigation 1 (10-110-102) and Civil Litigation 2 (10-110-103), and two other legal specialty courses of your choice, from NWTC in a live, synchronous, "real time" format. NWTC has designated the following courses as legal specialty courses:

Required Legal Specialty Courses
*10-110-102 Civil Litigation 1
*10-110-103 Civil Litigation 2
 10-110-104 Legal Research
 10-110-105 Legal Writing
 10-110-107 Legal Aspects/Business Org.

Curriculum
The Paralegal Associate Degree is offered in the day and in the evening. It is a two-year, four-semester program. The program offers both full- and part-time completion options. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
+ 10-110-101	Paralegal Intro/Legal Ethics	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
10-809-103	Think Critically & Creatively	3
	SEMESTER TOTAL	15

SECOND SEMESTER
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
* 10-110-102	Civil Litigation 1	3
10-110-104	Legal Research	3
10-110-110	Real Estate Law (or **choice below)	3
10-110-175	Legal Computer Applications	3
	SEMESTER TOTAL	16

THIRD SEMESTER
* 10-110-103	Civil Litigation 2	3
10-110-106	Law-Family (or **choice below)	3
10-110-107	Legal Aspects/Business Org	3
10-110-114	Administration of Estates (or **choice below)	3
10-809-199	Psychology of Human Relations OR	3
10-809-198	Intro to Psychology	3
	Elective	3
	SEMESTER TOTAL	18

FOURTH SEMESTER
10-110-105	Legal Writing	3
10-110-160	Law-Employment (or **choice below)	3
10-110-199	Paralegal Internship Practicum OR	2
10-110-197	Paralegal Field Research	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	66

CURRICULUM NOTE
+ A grade of "C" or better must be achieved in 10-110-101 Paralegal Intro/Legal Ethics in order to proceed with core Paralegal courses (those numbered 10-110-XXX).

** Students must take 4 of 8 legal speciality courses below:
 10-110-106 Family Law
 10-110-110 Real Estate Law
 10-110-114 Administration of Estates
 10-110-115 Administrative Law
 10-110-122 Creditor/Debtor Relations
 10-110-160 Employment Law
 10-110-168 Paralegal Criminal Procedures
 10-110-169 Indian Law

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-110-101 PARALEGAL INTRO/LEGAL ETHICS ...introduction to the legal profession: ethics, court system, legal research, and roles of the paralegal.

10-110-102 CIVIL LITIGATION 1 ...civil procedure in state and federal courts, the litigation process with emphasis on the paralegal function in investigating and gathering information, and preparing pleadings and motions. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-103 CIVIL LITIGATION 2 ...civil litigation including discovery, settlement, trial, and appellate procedure. (Prerequisites: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better; 10-110-102, Civil Litigation 1)

10-110-104 LEGAL RESEARCH ...research terminology; sources of law; primary/secondary authority; mandatory/persuasive authority; citation form; factual/legal issues; effective research strategies; validating and updating results; computer-assisted legal research; Internet research. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-105 LEGAL WRITING ...process writing; writing fundamentals; proofreading; in-house documents; legal correspondence; analytical writing; synthesizing cases/authorities; briefing cases; legal memoranda; persuasive writing; drafting pleadings, motions, legal briefs; drafting discovery documents. (Prerequisites: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better; 10-110-104, Legal Research)

10-110-106 LAW-FAMILY ...this course is designed to familiarize the student with basic legal concepts involved in the area of family relations. The primary emphasis will be in the field of divorce. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-107 LEGAL ASPECTS/BUSINESS ORGANIZATIONS ...formation, operation, and dissolution of types of business organizations, and substantive and procedural law involving business organizations. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-110 REAL ESTATE LAW ...law of real property, forms of ownership, land description methods, public and private encumbrances, real estate contracts, deeds, financing sources, title evidence, and the closing process. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-114 ADMINISTRATION OF ESTATES ...property classification; property ownership; succession; wills: modification, revocation, drafting, execution; client contact; probate courts; trust classification; estate planning; ethics; personal representatives; formal probate; summary proceedings; informal probate. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-115 ADMINISTRATIVE LAW ...the paralegal's role in preparation and representation of cases before administrative agencies, structure and authority of administrative agencies, procedures, and substantive state and federal administrative law. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-122 CREDITOR/DEBTOR RELATIONS ...legal rights of creditors and debtors, collection of outstanding debts, execution of judgments, small claims court, bankruptcy procedures, and filing bankruptcy petitions and schedules. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-160 LAW-EMPLOYMENT ...analyze federal and state laws governing employment relationships, job discrimination, sexual harassment, work place privacy, labor standards, and human resource management. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-168 PARALEGAL CRIMINAL PROCEDURES ...substantive and procedural criminal law, the role of paralegals in both the prosecution and defense of criminal actions, emphasis on investigations and preparation of legal documents. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-169 INDIAN LAW ...Wisconsin Indians, tribal sovereignty, federal/Indian relations, tribal governments, tribal courts, treaty making, removal/ reservation life, assimilation, reorganization, termination, self-determination, gaming, and other contemporary issues. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-175 LEGAL COMPUTER APPLICATIONS ...various computerized methods used to open new client files, organizing and maintaining documentation necessary for computerized litigation, document creation and law office administration. (Corequisite: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-197 PARALEGAL FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus & Info Tech Occup Prep)

10-110-199 PARALEGAL INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100 Bus & Info Tech Occup Prep)

10-809-103 THINKING CRITICALLY & CREATIVELY ...instruction in realistic/practical methods of thinking, including decision making, problem solving, analyzing ideas, troubleshooting, argumentation, persuasion, creativity, setting goals/ objectives. Students apply strategies/tools in a variety of situations.

Paramedic-Emergency Medical Technician

Program Code 305312

Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Paramedic-Emergency Medical Technician students perform emergency patient care and advanced life support in the pre-hospital setting, transporting injured and ill patients to hospital emergency departments.

Successful completion of the Paramedic program prepares and entitles the student to take the National Registry licensing examination for Paramedics. A graduate is licensed as a paramedic only after successful completion of the licensing examination.

Program Outcomes

- Perform patient assessment.
- Ventilate patients.
- Manage trauma and medical problems.
- Communicate patient information to hospital.
- Develop paramedic-patient interaction.
- Administer medications.
- Administer intravenous therapy.
- Interpret electrocardiograms.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be currently licensed as an EMT in the state of Wisconsin.
- Students are required to maintain a current CPR card on a two-year renewal cycle to comply with affiliating agency requirements.
- Students are required to complete an additional course within the program that would permit the completion of the required field experience necessary to qualify for licensure.
- First priority for admission is given to applicants sponsored by a Wisconsin licensed ambulance service. Unsponsored applicants are admitted only after all sponsored students are admitted.
- NWTC is required to comply with the Wisconsin Caregiver Law. For the most current information on the Caregiver Law, visit this website: www.dhfs.state.wi.us

Employment Potential

A graduate of the program will have the potential for employment as a Paramedic.

Paramedic: performs advanced level pre-hospital care for paramedic level ambulance services and in hospital emergency departments. These could be either private or municipal employers.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Note

Transfer of credits will be evaluated on a case-by-case basis only.

Curriculum

The Paramedic Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 24 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
30-531-321	Paramedic Clinical 1	4
30-531-324	Paramedic Lab 1	2
30-531-330	Paramedic Principles 1A	3
30-531-331	Paramedic Principles 1B	3
	SEMESTER TOTAL	12

SECOND SEMESTER

Catalog No.	Description	Credits
30-531-323	Paramedic Clinical 2	4
30-531-325	Paramedic Lab 2	2
30-531-332	Paramedic Principles 2A	3
30-531-333	Paramedic Principles 2B	3
	SEMESTER TOTAL	12
	TOTAL CREDITS	24

CURRICULUM NOTE

Additional Required Course for Licensure: This course is a required course necessary to fulfill the eligibility requirements for licensure exams.

Catalog No	Description	Credits
30-531-326	Paramedic-Clinical 3	3
	Clinical Hours	216

No final grade lower than a "C" is acceptable in any course. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-531-321 PARAMEDIC CLINICAL 1
...paramedic-patient interactions, blood samples, patient assessment, intravenous therapy, airway management, medication administration, assessment/management of respiratory emergencies in supervised clinical practice, and skill development in an acute care hospital.

30-531-323 PARAMEDIC CLINICAL 2
...interpretation of electrocardiograms, assessment/management of cardiovascular, medical, trauma, pediatric, and obstetric emergencies in supervised clinical practice in an acute care hospital. (Prerequisite: 30-531-321, Paramedic Clinical 1)

30-531-324 PARAMEDIC LAB 1
...management of shock, respiratory, and cardiac emergencies; intravenous therapy; medication administration; endotracheal intubation; advanced airway management skills; and EKG monitoring.

30-531-325 PARAMEDIC LAB 2
...management of advanced cardiovascular emergencies, advanced trauma management skills, pediatric advanced life support skills, report and communication skills, and preparation skills for practical exam. (Prerequisite: 30-531-324, Paramedic Lab 1)

30-531-330 PARAMEDIC PRINCIPLES 1A
...roles and responsibilities of the paramedic, human systems and patient assessment, shock and fluid therapy, pharmacology, assessment/ management of respiratory and cardiovascular emergencies. (Corequisite: 30-531-331, Paramedic Principles 1B)

30-531-331 PARAMEDIC PRINCIPLES 1B
...roles and responsibilities of the paramedic, human systems and patient assessment, shock and fluid therapy, pharmacology, assessment/ management of respiratory and cardiovascular emergencies.

30-531-332 PARAMEDIC PRINCIPLES 2A
...cardiovascular, neurologic, obstetric and gynecologic, soft tissue, musculoskeletal, acute medical, pediatric, and psychiatric emergencies; operational aspects of EMS. (Corequisite: 30-531-333, Paramedic Principles 2B)

30-531-333 PARAMEDIC PRINCIPLES 2B
...cardiovascular, neurologic, obstetric and gynecologic, soft tissue, musculoskeletal, acute medical, pediatric, and psychiatric emergencies; operational aspects of EMS.

Pharmacy Technician
Program Code 315361
Technical Diploma

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is eligible for financial aid **only** through Lakeshore Technical College.

Program Description

If you're ill or injured, you have access to an enormous variety of therapeutic medications, and you trust your pharmacy to correctly interpret and fill your prescriptions. Pharmacy technicians contribute to our safety by assisting pharmacists in a variety of technical tasks. If you're attentive to detail, organized, a good communicator, and like math, science, and working with people, a career as a pharmacy technician may be your prescription for success.

Program Outcomes

- Package and label drugs for prescription dispensing.
- Prepare and deliver unit dose to the nursing services of hospitals or nursing homes.
- Prepare parenteral admixtures under aseptic and sterile conditions.
- Receive and inventory drug shipments.
- Maintain records, including drug shipments.
- Facilitate communications for third-party reimbursement.
- Compound solutions, ointments, lotions, suppositories, and other medications.
- Comprehend and utilize medical and drug terminology common to the pharmaceutical environment.
- Practice ethical standards and recognize legal implications of your actions as they relate to yourself, the pharmacist, and the pharmacy.

Requirements for Program Entry

- Application
- Application Fee
- Entrance Assessment Scores
- Transcripts
- Background Check
- Program Advising Session
- Health/TB/Tetanus Form
- Student Handbook/Essential Functions Completion
- Notice of Rights and Authorizations to Release Confidential Educational Records

Employment Potential

- Home IV Specialist
- Pharmacy Technician employed at:
  - Community Pharmacies
  - Hospital Pharmacies
  - Nursing Home Pharmacies

About Shared Programs

LTC offers its Pharmacy Technician program in cooperation with technical colleges across the state. As a pharmacy technician student, you'll:

- Attend live, interactive TV classes sent from LTC to your local technical college.
- Receive laboratory training in local pharmacies.
- Participate in real-world, hands-on training during a 4-week clinical program.
- Take general studies classes at your local technical college.

Note

Other Program Expectations

You'll need to have CPR certification (one- and two-person, adult, child and infant) required prior to starting clinicals.

Graduation Requirements

Students must attain a "C" or better in all required classes and maintain a grade point average of 2.0 or above to be eligible for graduation.

Functional Abilities

Functional Abilities are the basic duties that a student must be able to perform with or without reasonable accommodations. At the postsecondary level, students must meet these requirements, and they cannot be modified.

Potential Changes

- Program start dates vary; check with your counselor for details.
- Curriculum and program acceptance requirements are subject to change.

Curriculum

The Pharmacy Technician Technical Diploma is a two-semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon graduation, students will have completed 36 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-501-101	Medical Terminology	3
10-510-102	Health Insurance & Reimburse	3
10-536-110	Pharmaceutical Calculations	3
10-536-112	Pharmacy Business Apps	4
10-536-115	Pharmacy Law	2
10-536-120	Fundamentals of Reading Prescr	1
10-536-138	Pharmacy Community Clinical	2
	SEMESTER TOTAL	18

SECOND SEMESTER

10-536-122	Pharmacology	3
10-536-124	Pharmacy Drug Distribution	1
10-536-126	Pharmacy Parenteral Admixtures	3
10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3

PLUS
CHOICE A

10-536-140	Pharmacy Hospital Clinical	3
10-536-141	Hospital Clinical Lab	2
	OR	

CHOICE B

10-104-102	Principles of Marketing	3
	OR	
10-104-104	Selling Principles	3
	OR	
10-182-108	Purchasing	3
10-536-142	Pharmacy Community Cl-Adv	2
	SEMESTER TOTAL	18
	TOTAL CREDITS	36

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-104-000 PRINCIPLES OF MARKETING ...introduces the student to the consumer decision process model, the bases used to segment a market, basic concepts about goods, services, and ideas, the nature of supply chain and distribution, integrated marketing communications, and the stages of the product life cycle and their impact on the marketing.

10-104-001 SELLING PRINCIPLES ...prepares the student to use the steps of the selling process to perform sales presentations.

10-182-000 PURCHASING ...introduces the participant to basic purchasing, quality specifications, inventory control, supplier selection, price aspects, research and measurement, and global purchasing. This course is exciting for anyone interested in working in a challenging and rewarding purchasing and supply chain management career.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-510-102 HEALTH INSURANCE AND REIMBURSEMENT ...introduces the learner to Federal, state, and private health insurance plans and managed care systems; and surveys the coding, submission and processing cycle of claims, as well as reimbursement methods used by payers. It provides application of information to ambulatory settings, pharmacies, hospitals, and long term care.

10-536-110 PHARMACEUTICAL CALCULATIONS ...prepares the learner to enlarge and reduce formulas and solve proportions, dilutions, allegations, and other calculations pertinent to the preparation of pharmaceuticals using metric, apothecary, avoirdupois, and household measuring systems.

10-536-112 PHARMACY BUSINESS APPLICATIONS ...prepares the learner to utilize pharmaceutical business terminology, procedures, customer service, record keeping, purchasing procedures, inventory control systems, pricing, merchandising, reference materials, ethics, roles, responsibilities, and relationships with patients and coworkers.

10-536-115 PHARMACY LAW ...introduces the learner to federal and state regulations that apply to pharmacy practice.

10-536-120 FUNDAMENTALS OF READING PRESCRIPTIONS ...prepares the learner to work in a community or hospital pharmacy by exploring the role of a pharmacy technician within the healthcare team; examining each step in the prescription filling process; and identifying the top 200 drugs by brand and generic name and therapeutic class.

10-536-122 PHARMACOLOGY ...appropriately in the pharmacy by learning how drugs work through examination of the anatomy, physiology, pathophysiology, and drug therapy for each of the major systems.

10-536-124 PHARMACY DRUG DISTRIBUTION SYSTEMS ...is an introductory study of the basic drug distribution systems used in community and institutional pharmacy, including automation technology, pharmacist and pharmacy technician roles, and dispensing considerations.

10-536-126 PHARMACY PARENTERAL ADMIXTURES ...provides the learner with the skills to utilize aseptic technique in vertical and horizontal laminar flow hoods for preparation of solutions and medications to be administered intravenously, intramuscularly, subcutaneously, and intradermally to patients.

10-536-138 PHARMACY COMMUNITY CLINICAL ...provides hands-on experience in a community pharmacy for 108 hours during quarter two. Areas of instruction include interpretation of prescriptions, entering prescriptions on computer, patient profiles, correctly filling and labeling prescriptions, billing patient and third parties, customer service, over-the counter medications, purchasing, checking in deliveries, and inventory control, compounding and patient confidentiality.

10-536-140 PHARMACY HOSPITAL CLINICAL ...provides the learner with the skills to prepare parenteral admixtures, fill medication carts and unit-dose drawers, control inventory, package medications, and maintain patient records in the hospital setting.

10-536-141 HOSPITAL CLINICAL LAB ...provides the learner with the skills to prepare parenteral admixtures, fill medication carts and unit-dose drawers, control inventory, package medications, and maintain patient records in the hospital setting.

10-536-142 PHARMACY COMMUNITY CLINICAL-ADVANCED ...pharmacy services in areas of diabetes services, immunization programs, durable medical equipment, automated dispensing systems, patient education, and over-the-counter products, in addition to traditional community services. This course involves a hands-on component in a community pharmacy and a research component.

Physical Therapist Assistant

Program Code 105241
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Physical Therapist Assistant program educates students to carry out patients' rehabilitation programs under the supervision of a licensed physical therapist.

Program Outcomes
- Demonstrate effective communication with patients, families, and health care team.
- Exhibit behaviors and conduct that reflect respect and sensitivity according to physical therapy practice standards.
- Function under the supervision of a physical therapist in a safe, legal, ethical manner.
- Produce documentation to support the delivery of physical therapy services.
- Demonstrate critical thinking skills to implement and adjust a plan of care under the direction and supervision of a physical therapist.
- Perform technically competent data collection under the direction and supervision of the physical therapist.
- Perform technically competent physical therapy interventions under the direction and supervision of the physical therapist.
- Educate patients, families, and other health providers.
- Integrate components of administrative, operational, and fiscal practices of physical therapy service in a variety of settings.
- Implement a self-directed plan for career development, credentialing, and lifelong learning.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Accreditation
The Physical Therapist Assistant Program at Northeast Wisconsin Technical College is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) of the American Physical Therapy Association (APTA).
The Commission on Accreditation in Physical Therapy Education
Department of Accreditation
American Physical Therapy Association
1111 North Fairfax Street
Alexandria, VA 22314
Telephone: 703-706-3245
Website: www.apta.org/CAPTE

Board/Certification Examinations
Graduates are eligible to take the Physical Therapist Assistant Examination through the National Physical Therapy Examination (NPTE).

Employment Potential
A graduate of this program will have the potential for employment as a Physical Therapist Assistant. The State of Wisconsin does require a license to practice as a physical therapist assistant.

Physical Therapist Assistant: assists the physical therapist in the provision of physical therapy, performs physical therapy interventions and related tasks, carries out operational functions, makes modifications within the scope of the established plan of care, performs documentation and assessments under the direction and supervision of a physical therapist.

Clinical Experience
- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances and participate in weekend rotations.
- Students are required to complete an American Heart Association Health Care Provider CPR course prior to clinical experiences. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Students may be required to complete drug testing and/or finger printing by clinical agencies.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admissions Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)
- One year of Algebra completed with a "C" or better (or attain program benchmark for Algebra on the Academic Skills Assessment).
- One year of Chemistry completed with a grade of "C" or better. If in high school, "C" in two semesters.
- Applicants with documentation of completion of General Anatomy and Physiology, with a "B" or better, will receive priority standing among that year's applicant pool.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 90; Arithmetic: 90; Sentence Skills: 94; Algebra: 60. Remediation options are available to reach required scores. Proof of remediation must be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring program orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Submit Caregiver Background Check paperwork.
- Complete 20 hours of mandatory volunteer time within a healthcare setting or submit equitable work experience.

Curriculum
The Physical Therapist Assistant Associate of Applied Science Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 70 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
* 10-524-138	PTA Kinesiology 1	3
* 10-524-139	PTA Patient Interventions	4
* 10-524-140	PTA Professional Issues 1	2
10-801-196	Oral/Interpersonal Comm	3
* 10-806-177	Gen Anatomy & Physiology	4
	SEMESTER TOTAL	16

SECOND SEMESTER
* 10-524-141	PTA Kinesiology 2	4
* 10-524-142	PTA Therapeutic Exercise	3
* 10-524-143	PTA Therapeutic Modalities	4
10-801-136	English Composition 1	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	17

SUMMER SEMESTER
* 10-524-155	PTA Pediatrics	3
10-809-172	Race Ethnic & Diversity	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	9

THIRD SEMESTER
* 10-524-144	PTA Princ of Neuro Rehab	4
* 10-524-145	PTA Princ of Musculo Rehab	4
* 10-524-146	PTA Cardio & Integ Mgmt	3
* 10-524-147	PTA Clinical Practice 1	2
10-809-188	Developmental Psychology	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
* 10-524-148	PTA Clinical Practice 2	3
* 10-524-149	PTA Rehab Across the Lifespan	2
* 10-524-150	PTA Professional Issues 2	2
* 10-524-151	PTA Clinical Practice 3	5
	SEMESTER TOTAL	12
	TOTAL CREDITS	70

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Flexible Learning Option
A part-time track is available. This option is scheduled over an eleven-semester, four-year period including summer semesters. Individuals must request this option on their application.

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-524-138 PTA KINESIOLOGY 1
...introduces basic principles of musculoskeletal anatomy, kinematics, and clinical assessment. Students locate and identify muscles, joints, and other landmarks of the lower quadrant in addition to assessing range of motion and strength. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-139 PTA PATIENT INTERVENTIONS ...an introduction to basic skills and physical therapy interventions performed by the physical therapist assistant. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-140 PTA PROFESSIONAL ISSUES 1
...introduces the history and development of the physical therapy program, legal and ethical issues, the interdisciplinary health care team, and professional communication skills. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-141 PTA KINESIOLOGY 2
...applies basic principles from PTA Kinesiology 1 to the axial skeleton and upper quadrant including location and identification of muscles, joints and other landmarks. Integrate analysis of posture and gait. (Prerequisite: 10-524-138, PTA Kinesiology 1)

10-524-142 PTA THERAPEUTIC EXERCISE ...provides instruction on the implementation of a variety of therapeutic exercise principles. Learners implement, educate, adapt, and assess responses to therapeutic exercises. (Prerequisites: 10-806-177, General Anatomy & Physiology; 10-524-138, PTA Kinesiology 1)

10-524-143 PTA THERAPEUTIC MODALITIES ...develops the knowledge and technical skills necessary to perform numerous therapeutic modalities likely to be utilized as a PTA. (Prerequisites: Admission to the Physical Therapist Assistant program; 10-524-139, PTA Patient Interventions)

10-524-144 PTA PRINCIPLES OF NEUROMUSCULAR REHAB ...integrates concepts of neuromuscular pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-142, PTA Therapeutic Exercise; 10-524-141, PTA Kinesiology 2; 10-524-139, PTA Patient Interventions; 10-524-155, PTA-Pediatrics)

10-524-145 PTA MUSCULO REHAB ...integrates concepts of musculoskeletal pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-142, PTA Therapeutic Exercise; 10-524-141, PTA Kinesiology 2; 10-524-139, PTA Patient Interventions; 10-524-155, PTA-Pediatrics)

10-524-146 PTA MANAGEMENT OF CARDIOPULMONARY & INTEGUMENTARY CONDITIONS ...integrates concepts of cardiopulmonary and integumentary pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-139 PTA Patient Interventions; 10-524-142 PTA Therapeutic Exercise; 10-524-141 PTA Kinesiology 2; 10-524-155, PTA-Pediatrics)

10-524-147 PTA CLINICAL PRACTICE 1 ...provides a part-time clinical experience to apply foundational elements, knowledge, and technical skills pertinent to physical therapy practice. (Prerequisites: 10-524-141, PTA Kinesiology 2; 10-524-143, PTA Therapeutic Modalities)

10-524-148 PTA CLINICAL PRACTICE 2 ...provides another part-time clinical experience to apply foundational elements, knowledge, and technical skills required of the entry level physical therapist assistant in various practice settings. (Prerequisite: 10-524-147, PTA Clinical Practice 1)

10-524-149 PTA REHABILITATION ACROSS THE LIFESPAN ...a capstone course that integrates concepts of pathology, physical therapy interventions and data collection across the lifespan. The PTA's role in health, and physical therapy interventions for special patient populations. (Prerequisites: 10-524-144, PTA Principles of Neuromuscular Rehab; 10-524-145, PTA Principles of Musculoskeletal Rehab; 10-524-146, PTA Management of Cardiopulmonary & Integumentary Conditions; Corequisite: 10-524-148, PTA Clinical Practice 2)

10-524-150 PTA PROFESSIONAL ISSUES 2 ...incorporates professional development, advanced legal and ethical issues, healthcare management and administration, and further development of professional communication strategies. (Prerequisite: 10-524-140, PTA Professional Issues 1; Corequisite: 10-524-148, PTA Clinical Practice 2)

10-524-151 PTA CLINICAL PRACTICE 3 ...provides a full-time clinical experience to apply foundational elements, knowledge, and technical skills required of the entry level physical therapist assistant in various practice settings. (Prerequisites: 10-524-144, PTA Principles of Neuromuscular Rehab; 10-524-145, PTA Principles of Musculoskeletal Rehab; 10-524-146, PTA Management of Cardiopulmonary & Integumentary Conditions; Corequisite: 10-524-148, PTA Clinical Practice 2)

10-524-155 PTA PEDIATRICS ...normal and abnormal human development, pediatric pathologies and dysfunctions, and physical therapy treatment approaches. (Prerequisites: 10-524-141, PTA Kinesiology 2; 10-524-142, PTA Therapeutic Exercise; 10-524-143, PTA Therapeutic Modalities)

Power Engineer and Boiler Operator
Program Code 304281
Technical Diploma

This program is not eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
Power Engineer and Boiler Operator prepares students to manage, operate, and control low (<15# steam pressure and high 15> pressure) boilers and auxiliary systems in factories, plants, and buildings.

Program Outcomes
- Be skilled in the management of energy conservation.
- Define industry safety standards and concepts.
- Explain operation of power engineering equipment.
- Study the National Institute for Uniform Licensing of Power Engineering (NIULPE) Standards.
- Describe boiler operation effects on emission.
- Describe water treatment fundamentals related to power engineering equipment.
- Describe power engineering related to control fundamentals.
- Recognize power engineering related equipment type and terminology.
- Identify power engineering firing methods for different fuel types.
- Apply natural science fundamentals to power engineering industry.
- Relate electricity basics and general principles to power engineering.
- Study American Society of Power Engineers (ASOPE) Standards and Testing.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
3rd or 4th Class Power Engineer/Boiler Operator: controls the operation of a boiler by reading gauges and varying fuel and water inputs.

Boiler Service Technician: services and repairs valves, fittings, and boiler tubes that are leaking or malfunctioning.

Boiler Installer: installs boilers, piping, controls, and auxiliary equipment.

Boiler Chemical Sales Representative: tests boiler water for chemical content and recommends additives to correct the water chemical content.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Boiler Fuel Consultant
- Boiler Inspector
- Field Engineer
- Power Plant Supervisor

Curriculum
The Power Engineer and Boiler Operator Technical Diploma is a two-year, part-time program. Upon graduation, a student will have completed 16 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-196-191	Supervision	3
10-804-101	Math 1-Trades	2
30-403-338	Power House-Blueprint Rdg	1
30-413-345	Power House-Control Sys	1
30-413-347	Power House-Electric Sys	2
30-428-334	Power Engineering II	3
30-428-337	Power House-Economics	1
30-428-344	Power Engineering I	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	16

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-403-338 POWER HOUSE-BLUEPRINT READING ...footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, ventilating, and air conditioning.

30-413-345 POWER HOUSE-CONTROL SYSTEMS ...boiler controls, ignition systems, burner management sequencing, flame rod and optical systems, boiler start-up/shut down, problem solving and troubleshooting techniques.

30-413-347 POWER HOUSE-ELECTRICAL SYSTEMS ...principles of electricity, tools required to troubleshoot, safety control, low-volt systems, utility provided power, troubleshooting power systems, motors and controller, wiring methods, transformers, and testing equipment.

30-428-334 POWER ENGINEERING II ...advanced training regarding the principles and operational techniques associated with power and heating boilers. Prepare students with competencies to take the ASOPE or NIUPE exams to qualify for 3rd class licensing. (Prerequisite: 30-428-344, Power Engineering I)

30-428-344 POWER ENGINEERING I ...boiler accidents, thermodynamics principles, high pressure steam boilers, boiler construction, fittings, instrumentation, controls, operation and maintenance, power plant pumps. refrigeration, air compression, prime movers, water treatment, electrical principles, support systems.

Practical Nursing
Program Code 315431
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay, Marinette and Sturgeon Bay campuses and at the West Regional Learning Center-Shawano. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. For information in Shawano: (715) 524-2418. Toll-Free: (888) 385-6982.

Program Description
Practical Nursing graduates work in hospitals, nursing homes, clinics, community health agencies, and private homes. They give bedside care to patients whose conditions are relatively stable and assist the Registered Nurse or doctor in the care of the acutely ill person.

Program Outcomes
- Adhere to standards of practice within legal, ethical, and regulatory frameworks of the licensed practical nurse.
- Use effective communications skills recognizing lifespan considerations.
- Assist with health assessment of individuals, families, and groups across the lifespan.
- Participate in clinical decision-making within the LPN scope of practice.
- Provide safe caring interventions with diverse populations across the lifespan.
- Use principles of teaching and learning processes to reinforce teaching plans recognizing lifespan considerations.
- Work cooperatively with others to provide holistic care.
- Under supervision, manage and direct care within and across health care setting according to established protocols.

Requirements for Program Entry
- Attend mandatory orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements. Recommend taking between program orientation and program start.
- All students must successfully complete a DHS approved Nursing Assistant course prior to program entry.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Licensed Practical Nurse: administers care to individuals whose conditions are relatively stable; administers care to the acutely ill under the direct supervision of an RN or MD; teaches basic hygiene, nutrition, and aspects of good health; administers first aid; and assists with health assessment and basic health teaching in a variety of settings under the supervision of an RN or MD.

Health Insurance Claims Approver: processes insurance claims on a computer terminal.

Clinical Experience
Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Accreditation
The Practical Nursing program is accredited by:
Wisconsin Board of Nursing
Dept of Regulation & Licensing
1400 East Washington Street
PO Box 8935
Madison WI 53708-8935
(608) 266-2112

Board/Certification Examinations
Graduates of the program are eligible to take the NCLEX-PN Examination for licensure as a Licensed Practical (LPN).

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program application, an Academic Skills Assessment (Accuplacer) assessment with appropriate benchmark scores is necessary within the last three years. Academic Skills Assessment program benchmarks of Reading Comprehension: 78; Arithmetic: 80; Sentence Skills: 90 must be met prior to submitting an application. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Curriculum
The Practical Nursing Technical Diploma is a three-semester program. Upon graduation, a student will have completed 30 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-801-136	English Composition 1	3
* 31-806-312	Anatomy/Struct-Funct	2
	SEMESTER TOTAL	5

SECOND SEMESTER
10-809-188	Developmental Psychology	3
* 31-543-301	Nursing Fundamentals	2
* 31-543-302	Nursing Skills	3
* 31-543-303	Nursing Pharmacology	2
* 31-543-304	Nsg:Intro to Clinical Practice	2
	SEMESTER TOTAL	12

THIRD SEMESTER
10-801-196	Oral/Interpersonal Comm	3
* 31-543-305	Nursing Health Alterations	3
* 31-543-306	Nursing Health Promotion	3
* 31-543-307	Nsg:Clin Care Across Lifespan	2
* 31-543-308	Nsg:Intro Clinical Care Mgt	2
	SEMESTER TOTAL	13
	TOTAL CREDITS	30

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in the nursing or natural science courses marked with an asterisk. A student must repeat the particular course with "C" or better final grade to continue in or graduate from this program. If the course is sequential, the successful retake must occur before continuing the sequence.
- Individuals with criminal records may be ineligible for licensure. Individuals with abuse records may be ineligible for employment in nursing homes.
- It is suggested that a Medical Terminology course (10-501-101) be taken prior to entering the program.

Flexible Learning Option
A part-time program format is available. This option is scheduled over six semesters including two summer semesters. Each semester has four to six credits. For details, please refer to the part time Practical Nursing brochure.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-543-301 NURSING FUNDAMENTALS ...focuses on basic nursing concepts that the beginning nurse will need to provide care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients with alterations in cognition, elimination, comfort, grief/loss, mobility, integument, and fluid/electrolyte balance. (Prerequisite: Accepted into Practical Nursing Program; Corequisites: 31-806-312, Anatomy/Structure Function; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology; 31-543-304, Nursing: Introduction to Clinical Practice)

31-543-302 NURSING SKILLS ...focuses on development of clinical skills and physical assessment across the lifespan. Content includes mathematic calculations and conversions related to clinical skills, blood pressure assessment, aseptic technique, wound care, oxygen administration, tracheostomy care, suctioning, management of enteral tubes, basic medication administration, glucose testing, enemas, ostomy care, and catheterization. In addition, the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach. (Prerequisite: Accepted into Practical Nursing Program; Corequisites: 31-806-312, Anatomy/Structure Function; 31-543-301, Nursing Fundamentals; 31-543-303, Nursing Pharmacology; 31-543-304, Nursing Introduction to Clinical Practice)

31-543-303 NURSING PHARMACOLOGY ...this course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisite: Accepted into Practical Nursing Program; Corequisites: 31-806-312, Anatomy/Structure Function; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-304, Nursing Introduction to Clinical Practice)

31-543-304 NSG: INTRO TO CLINICAL PRACTICE ...this introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisite: Accepted into Practical Nursing Program; Corequisites: 31-806-312, Anatomy/Structure Function; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology)

31-543-305 NURSING HEALTH ALTERATIONS ...this course elaborates upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of clients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply therapeutic nursing interventions. It will also introduce concepts of leadership, team building, and scope of practice. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-308, Nursing: Intro to Clinical Management)

31-543-306 NURSING HEALTH PROMOTION ...this course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyle choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-307, Nursing: Clinical Care Across Lifespan)

31-543-307 NSG:CLIN CARE ACROSS LIFESPAN ...this clinical experience applies nursing concepts and therapeutic interventions to clients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extended care to include the family is emphasized. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-306, Nursing Health Promotion)

31-543-308 NSG: INTRO CLINICAL CARE MGT ...this clinical experience applies nursing concepts and therapeutic nursing interventions to groups of clients across the lifespan. It also provides an introduction to leadership, management, and team building. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-305, Nursing Health Alterations)

31-806-312 ANATOMY/STRUCTURE-FUNCTION ...human body systems, structural formation.

Print Technology

Program Code 312041
Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Print Technology program trains students in pre-press operations, offset presswork, computer-to-plate imaging, finishing processes, electronic publishing, and digital print applications.

Program Outcomes

- Analyze jobs for operations and materials costs.
- Perform electronic pre-press operations.
- Lay out jobs and generate CTP (computer-to-plate) production.
- Create press proofs.
- Set up and operate offset and digital printing presses.
- Maintain a safe work environment.
- Create machine operation procedures.
- Pre-flight jobs for various printing processes.
- Perform finishing operations on printed jobs.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Communication skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 75; Arithmetic: 51; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Digital Output Operator: produces print communication using digital output devices and computer workflow systems. Manages print quality on full color and monochrome projects.

Offset/Press Operator: sets up, prepares and operates presses; loads paper, installs printing plates, adjusts guides and control for machine operations.

Offset/Press Assistant: prepares press for run; runs press proof; adjusts plate, paper feed, tension of paper, ink, and water flow.

Large Format Output Operator: produce large format signage on different substrates.

Bindery/Finishing Operator: operates machines that cut, fold, collate, staple, stitch, trim, and bind pages.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Graphic Designer
- Pre-Press Technician
- Print Production Supervisor/Manager
- Estimator
- Pre-Flight Specialist
- Customer Service Representative

The following certificates/technical diplomas may be applied toward this program:
902042, Digital Print Technology

Curriculum

The Print Technology Technical Diploma is a one-year, two-semester program. Upon graduation, students will have completed 31 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-111-103	Macintosh-Intro	1
10-111-161	Macintosh Illustration	3
10-204-110	Publishing Technologies	3
10-204-111	Digital Publishing Operations	3
10-204-124	Variable Data Publishing	3
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

SECOND SEMESTER

10-111-101	Macintosh-Image Editing	3
10-111-125	Graphic Reproduction Tech	3
10-204-126	Digital Print Applications	3
10-204-128	Digital Fulfillment/Mailing	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	15
	TOTAL CREDITS	31

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-103, Macintosh-Intro)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images. (Corequisite: 10-111-103, Macintosh-Intro)

10-204-110 PUBLISHING TECHNOLOGIES ...introduction to printing process, electronic publishing, prepress operations, press operations, postpress operations, job logs, professional portfolios, and job seeking skills. (Corequisite: 10-111-103, Macintosh-Intro)

10-204-111 DIGITAL PUBLISHING OPERATIONS ...press equipment, processors, inks, print quality, job tickets, standard operating procedures, densitometers, printing problems, and trapping situations. (Prerequisite: 10-111-103, Macintosh-Intro)

10-204-124 VARIABLE DATA PUBLISHING ...learn how to link database files to page layout applications. Create and manage correct variable channels in page layouts, apply text and image changes to layout to create a personalized printed page, research how the information is gathered to create personalized content.

10-204-126 DIGITAL PRINT APPLICATIONS ...explain why the industry is in a state of transition towards digital printing; outline the proper time to select digital printing as a production tool; determine what type of project fits well into a digital print environment; identify what type of project fits the mold of digital printing.

10-204-128 DIGITAL FULFILLMENT AND MAILING ...learn different ordering processes for digital printing, outline mailing regulations in regard to variable data printing, explain the differences in digital print industry segments, outline deliverable standards in regard to digital print processes, outline how digital printing can be a component to a successful marketing campaign.
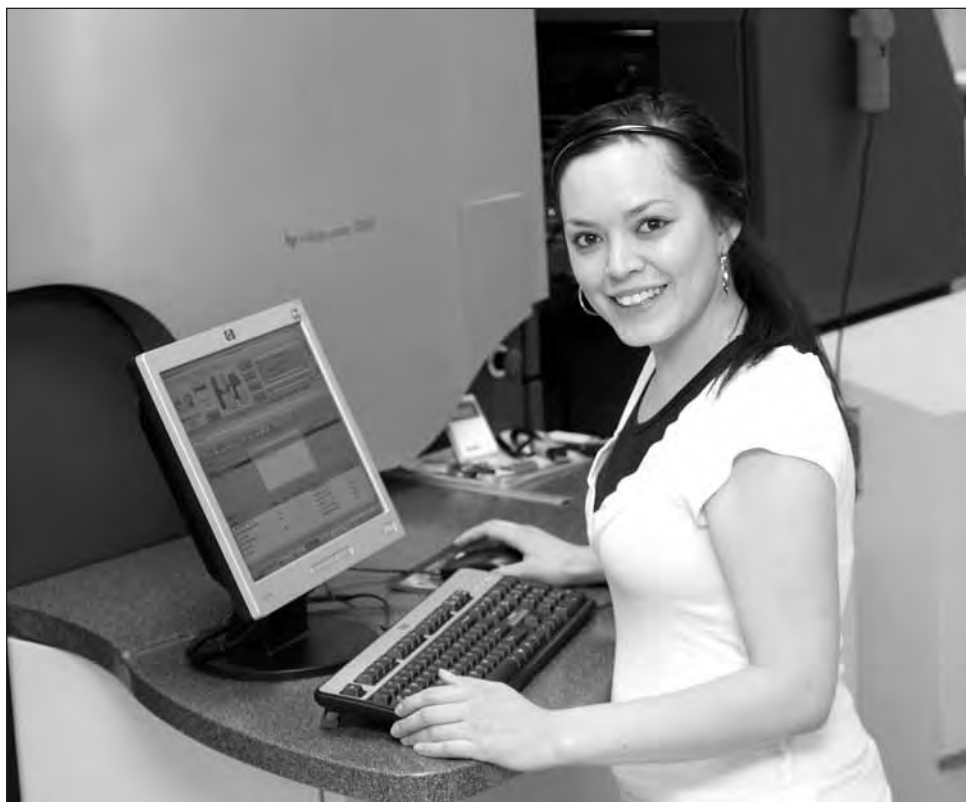
Prototype and Design
Program Code 106142
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Prototype and Design program prepares students to build a variety of three dimensional prototypes and models used in the design and engineering industry.

Students learn to develop prototypes for use in the manufacturing of automobiles, toys, and various stages of product development.

They also learn to build three-dimensional models used for architectural design, mechanical design, litigation, props, special effects and the entertainment industry.

Program graduates will acquire skills in modelmaking, welding, CNC machining, industrial design, problem solving and critical thinking.

Program Outcomes
- Develop planning strategies necessary to translate two-dimensional information into a three- dimensional prototype.
- Use critical thinking and problem solving techniques in the construction of a prototype.
- Create a variety of computer aided drawings using AutoCAD, Solidworks and Inventor.
- Create programs to be used on CNC (computer numerical control) milling machines using Surf CAM software.
- Construct 3D models using a variety of rapid prototyping processes.
- Produce highly detailed and accurate parts using the laser machining center.
- Fabricate silicone rubber molds and rigid molds suitable for casting.
- Build patterns and molds to be used for vacuum forming.
- Create jigs and fixtures necessary for special machining operations.
- Select and apply a variety of industrial finishes on various materials.
- Effectively estimate the time and cost to design and fabricate a prototype.
- Manage computer files and utilize a variety of technically related software.
- Work efficiently as a part of a team, or independently.
- Safely operate all hand tools, metalworking, and woodworking equipment typically used in a professional model shop.
- Effectively select appropriate materials and adhesives and understand their properties.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Product Development: develops and designs new products through the use of prototypes.

Prototype Model Builder: provides research and development on new products, works with molding, and makes models for all types of industries, such as toy and automobile manufacturers, so that the prototype will look like the finished product before production begins.

Engineering Design: translates engineering data and vendor information into scale prototypes or CAD models for use with Rapid Prototyping Processes. Usually employed in design and development of new products or systems.

Architectural Model Builder: translates, to scale, all architectural drawings using plot plans, elevations, sections, and details to construct three dimensional models using a wide variety of materials and processes.

Legal Model Builder: creates models that help win court cases by allowing a judge and jury to see a three-dimensional representation of the scene of an accident, injury, or crime.

Props and Special Effects Model Builder: makes models for the movie, television, and stage play industries.

Pattern and Mold Maker: fabricates wood, plastic, or metal patterns and molds for casting parts.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Mechanical Prototype Designer
- Model Shop Supervisor
- Computer Numerical Control Machinery Programmer/Operator
- Rapid Prototyping Operator
- Architectural Designer/Model Builder
- Freelance Model Builder

Curriculum
The Prototype and Design Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-420-151	Prototype Machine Tool	3
10-606-113	CAD	2
10-614-113	2D Essentials	2
10-614-152	Prototyping-Introduction to	5
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
10-442-153	Prototype Metal Fabrication	2
10-614-122	Prototype Design	3
10-614-124	Design Visualization	5
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
	SEMESTER TOTAL	17

THIRD SEMESTER

Catalog No.	Description	Credits
10-614-134	Engineering Models	5
10-614-136	Modeling 3D-CAD	3
10-614-138	CNC Maching-Adv	3
10-614-176	Model Finishing	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	17

FOURTH SEMESTER

Catalog No.	Description	Credits
10-614-143	Prototyping Solutions Advanced OR	5
10-614-139	Prototype & Design Internship	5
10-614-150	Visual Effects Modeling	3
10-614-174	Models-Machine	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	68

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics and science.
- High school algebra or equivalent.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 70; Sentence Skills: 76; Algebra: 68. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-151 PROTOTYPE MACHINE TOOL ...introduction to machine shop fundamentals using precision measuring instruments; performing machine tool operations on a metal lathe, vertical and horizontal milling machines and surface grinders; and basic foundry applications.

10-442-153 PROTOTYPE METAL FABRICATION ...ferrous and non-ferrous metals, oxyacetylene gas, tungston arc, gas metal arc, and metal fabrication. (Corequisite: 10-606-122, CAD Fab & Assembly; OR 10-614-122, Prototype Design)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-614-113 2D ESSENTIALS
...an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning. Knowledge integral to model building.

10-614-122 PROTOTYPE DESIGN ...creation of advanced mechanical and architectural computer aided drawings using AutoCAD, Solidworks, and Surf CAM software to produce 2-axis and 3-axis parts on a CNC milling machine. (Prerequisites: 10-606-113, CAD; 10-614-152, Prototyping-Introduction to; Corequisite: 10-614-124, Design Visualization)

10-614-124 DESIGN VISUALIZATION
...planning and construction stages of product models and architectural models focusing on fabrication methods, material selection, CNC machining, painting and finishing techniques, and model photography. (Prerequisites: 10-614-152, Prototyping-Introduction to; 10-606-113, CAD; Corequisite: 10-614-122, Prototype Design)

10-614-134 ENGINEERING MODELS
...engineering/design modeling, power and hand tools, materials and techniques; job responsibilities and relations with other disciplines; constructing engineering/design models; basic mold making; and Rapid Prototyping model processes. (Corequisite: 10-614-152, Prototyping-Introduction to)

10-614-136 MODELING 3D-CAD
...solid modeling (3D drawing) using AutoCAD, Solidworks, and Inventor Software; and 3D solid models/drawings; rapid prototyping; importing and exporting of data. (Prerequisite: 10-606-113, CAD)

10-614-138 CNC MACHINING-ADVANCED ...create two- and three-dimensional drawings, and tool paths using SurfCAM software. Parts will be machined on the CNC milling machine using materials typically used in the model building industry. (Prerequisites: 10-614-122, Prototype Design; 10-614-124, Design Visualization)

10-614-139 PROTOTYPE & DESIGN INTERNSHIP ...an introduction to model building, safety, tools, materials, flexible mold making, casting, limited run production, techniques and practices as on-the-job training.

10-614-143 PROTOTYPING SOLUTIONS ADVANCED ...an introduction to Product and Prototype modeling, safety, tools, materials, plastics, reinforcement, composites, flexible mold making, casting, limited run production, techniques and practices. (Prerequisite: 10-614-152, Prototyping-Introduction to)

10-614-150 VISUAL EFFECTS MODELING ...create foam latex masks from a clay sculpture that could be used as special effects in the entertainment industry. Learn to animate masks and props using radio control. (Prerequisite: 10-614-152, Prototyping-Introduction to)

10-614-152 PROTOTYPING-INTRODUCTION TO ...introduction to 3D model building using a variety of materials, machine processes, and fabrication techniques including CNC milling with an emphasis on accuracy, professionalism, and working within specified tolerances.

10-614-174 MODELS-MACHINE
...working models, preliminary through final prototype; plastic mechanisms, motions, characteristics, combinations, mechanical advantages, fits, clearances, threads, gears, levers, cams, motors, fasteners, and methods. (Prerequisite: 10-614-152, Prototyping-Introduction to)

10-614-176 MODEL FINISHING
...use a variety of methods to apply finishes most commonly used in the prototype profession. Finishes will be applied using airbrushes and different types of spray guns. The types of finishes used will be various automotive and industrial finishes. A three-dimensional museum quality diorama will also be fabricated.

Radiography
Program Code 105261
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Graduates perform routine radiographic imaging of the body. They work closely with physicians and may assist in the performance of invasive procedures. After completion of the program, many students may choose to acquire advanced certificates in Mammography, Bone Densitometry, Computer Tomography (CT), and/or Magnetic Resonance Imaging (MRI).

Program Outcomes
- Carryout the production and evaluation of radiographic images.
- Practice radiation safety principles.
- Adhere to quality management processes in radiography.
- Provide quality patient care.
- Apply computer skills in the radiographic clinical setting.
- Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics.
- Apply critical thinking and problem solving skills in the practice of diagnostic radiography.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Accreditation
The Radiography program is accredited by:
The Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, Illinois 60606-3182
(312) 704-5300

Clinical Experience
Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Board/Certification Examinations
Graduates are qualified to take the American Registry in Radiography Technologist (ARRT) Examination.

Employment Potential
A graduate of the Radiography program can choose to work in a variety of health care settings including clinics, hospitals and private practice physician offices. Career advancement opportunities exist in education, administration, and in commercial companies as education/application specialists, sales representatives and technical advisors.

Note
The Radiography Program of Northeast Wisconsin Technical College offers students enrolled in either the Bellin School of Radiologic Technology or Theda Clark Radiologic Technology Program the opportunity to complete an associate degree by completing the general education requirements.

Requirements for Program Application
- Completed application and all items listed below.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program application, an Academic Skills Assessment (Accuplacer) or ACT assessment with appropriate benchmark scores is necessary within the last three years. Academic Skills Assessment program benchmarks of Reading Comprehension: 90; Arithmetic: 90; Sentence Skills: 94; Algebra: 65, or minimum standard composite score of 22 on the ACT (minimum of Math 21, Reading 21, English 21), must be met prior to submitting an application. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Two semesters in high school, or one semester in college of Algebra and Chemistry completed with a grade of "C" or better.

Candidates submitting applications to the Radiography program must also provide:
- Three references from professional or academic experiences submitted on NWTC forms.
- An essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay must describe students' interest in the field and how their knowledge of the profession, experience in healthcare, specific skills and duties of a radiographer, and characteristics that make them a good candidate for the program.

The Radiography program follows a competitive enrollment process whereby candidate applications are reviewed by a Selection Committee. Candidates are ranked in the following categories: Assessment, Math/Science, Essays, References. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have the opportunity to re-apply.

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Curriculum
The Radiography Associate Degree is a two-year, two-summer, six-semester program. Upon graduation, a student will have completed 70 credits.

Summer semester core classes are scheduled to begin mid-May and end mid-July.

Catalog No.	Description	Credits
SUMMER SEMESTER		
10-804-195	College Algebra w Apps	3
* 10-806-177	Gen Anatomy & Physiology	4
	SEMESTER TOTAL	7
FIRST SEMESTER		
* 10-526-149	Radiographic Procedures 1	5
* 10-526-158	Introduction to Radiography	3
* 10-526-159	Radiographic Imaging 1	3
* 10-526-168	Radiography Clinical 1	2
* 10-526-195	Radiographic Quality Analysis	2
	SEMESTER TOTAL	15
SECOND SEMESTER		
* 10-526-170	Radiographic Imaging 2	3
* 10-526-189	Radiographic Pathology	1
* 10-526-191	Radiographic Procedures 2	5
* 10-526-192	Radiography Clinical 2	3
10-801-196	Oral/Interpersonal Comm	3
	SEMESTER TOTAL	15
SUMMER SEMESTER		
* 10-526-193	Radiography Clinical 3	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	6
THIRD SEMESTER		
* 10-526-194	Imaging Equipment Operation	3
* 10-526-196	Modalities	3
* 10-526-197	Radiation Protection & Biology	3
* 10-526-199	Radiography Clinical 4	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	15
FOURTH SEMESTER		
* 10-526-174	ARRT Certification Seminar	2
* 10-526-190	Radiography Clinical 5	2
* 10-526-198	Radiography Clinical 6	2
10-801-136	English Composition 1	3
10-809-166	Intro to Ethics: Theory & App	3
	SEMESTER TOTAL	12
	TOTAL CREDITS	70

CURRICULUM NOTE
* No final grade lower than "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

Requirements for Program Entry
- Attend mandatory spring program orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Submit Caregiver Background Check paperwork.
- Complete mandatory four-hour job shadow.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-526-149 RADIOGRAPHIC PROCEDURES 1 ...prepares radiography students to perform routine radiologic procedures on various parts of the body including the upper body, hip, pelvis and ankle. Students apply knowledge of human anatomy to position the patient correctly to achieve the desired result. (Prerequisites: Enrolled in Radiography program; 10-806-177, General Anatomy & Physiology)

10-526-158 INTRODUCTION TO RADIOGRAPHY ...introduces students to the role of radiography in health care. Students apply medical terminology, legal and ethical considerations to patient care and pharmacology in the radiologic sciences. (Prerequisite: Enrolled in Radiography program)

10-526-159 RADIOGRAPHIC IMAGING 1 ...introduces radiography students to the process and components of analog imaging. Students determine the factors that affect image quality including contrast, density, detail, and distortion. (Prerequisite: Enrolled in Radiography program)

10-526-168 RADIOGRAPHY CLINICAL 1 ...this beginning level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in the health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisites: Enrolled in Radiography program; 10-806-177, General Anatomy & Physiology; Corequisites: 10-526-158, Introduction to Radiography; 10-526-149, Radiographic Procedures 1; 10-526-159, Radiographic Imaging)

10-526-170 RADIOGRAPHIC IMAGING 2 ...explores film processing components as well as the principles and operation of digital imaging systems found in diagnostic radiology. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within analog and digital systems. Principles of digital system quality assurance and maintenance are presented. (Prerequisites: Enrolled in Radiography program; 10-526-159, Radiographic Imaging 1)

10-526-174 ARRT CERTIFICATION SEMINAR ...provides preparation for the national certification examination prepared by the American Registry of Radiologic Technologists. Emphasis is placed on the weak areas of the individual students. Simulated registry examinations are utilized. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-189 RADIOGRAPHIC PATHOLOGY ...prepares radiography students to determine the basic radiographic manifestations of pathological conditions. Students classify trauma related to site, complications, and prognosis and locate the radiographic appearance of pathologies. (Prerequisite: 10526195, RT-Image Analysis)

10-526-190 RADIOGRAPHY CLINICAL 5 ...this fifth level clinical course prepares radiography students to perform radiologic procedures on patients with some supervision. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-199, Radiography Clinical 4)

10-526-191 RADIOGRAPHIC PROCEDURES 2 ...prepares radiography students to perform routine radiologic procedures on various parts of the body including the skull, spine, and gastrointestinal systems. Students apply knowledge of human anatomy to position the patient correctly to achieve the desired result. (Prerequisites: Enrolled in Radiography program; 10-526-149, Radiographic Procedures 1; 10-806-177, General Anatomy & Physiology)

10-526-192 RADIOGRAPHY CLINICAL 2 ...this second level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-168, Radiography Clinical 1)

10-526-193 RADIOGRAPHY CLINICAL 3 ...this third level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the demonstration of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-192, Radiography Clinical 2)

10-526-194 IMAGING EQUIPMENT OPERATION ...introduces radiography students to the principles and application of x-ray technology. Students analyze how x-rays are produced and determine the corrective actions necessary for common equipment malfunctions. (Prerequisite: Enrolled in Radiography program)

10-526-195 RADIOGRAPHIC QUALITY ANALYSIS ...prepares radiography students to analyze radiographic images for quality. Students apply quality control tests to determine the causes of image problems including equipment malfunctions and procedural errors. (Prerequisite: Enrolled in Radiography program)

10-526-196 MODALITIES ...introduces radiography students to imaging modalities with an emphasis in computed tomography and cross-sectional anatomy. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-197 RADIATION PROTECTION & BIOLOGY ...prepares radiography students to protect themselves and others from exposure to radioactivity. Students examine the characteristics of radiation and how radiation affects cell biology. Students apply standards and guidelines for radiation exposure. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-198 RADIOGRAPHY CLINICAL 6 ...this final clinical course requires students to integrate and apply all knowledge learned in previous courses to the production of high quality images in the clinical setting. Students apply radiation protection and standard precautions in the production of images in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-190, RT-Clinical Practice 5)

10-526-199 RADIOGRAPHY CLINICAL 4 ...this fourth level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-193, Radiography Clinical 3)

Respiratory Therapist
Program Code 105151
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Respiratory Therapist program trains students in the evaluation, diagnosis, treatment, and rehabilitation of patients with chronic and acute disease of the heart and lungs.

Program Outcomes
- Apply respiratory therapy concepts to patient care situations.
- Practice respiratory therapy according to established professional and ethical standards.
- Demonstrate technical proficiency required to fulfill the role of a Respiratory Therapist.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Accreditation
The Respiratory Therapist program is accredited by the Committee on Accreditation for Respiratory Care (CoARC)
1248 Harwood Road
Bedford, TX 76021-4244
(817) 283-2835

Board/Certification Examinations
Graduates are eligible to take the National Board for Respiratory Care Credentialing Examinations.

Employment Potential
A graduate of this program will have the potential for employment in a hospital, nursing home, and homecare setting as a:
- Staff Therapist
- Pulmonary Rehabilitation Therapist
- Perinatal/Pediatric Therapist
- Pulmonary Function Technologist
- Sleep Disorder Center Technician
- Shift Supervisor
- Department Manager
- Home Care Therapist/Manager
- Nursing Home Therapist
- Respiratory Care Educator
- Medical Equipment and Supplies Sales Representative

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)
- Two semesters in high school, or one semester in college of the following: Algebra, Biology, Chemistry, and Advanced Math (or Physics). All required course grades must be completed with a "C" or better.
- Applicants with documentation of completion of General Anatomy and Physiology, with a "B" or better, will receive priority standing among that year's applicant pool.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or the minimum standard composite score of 20 on the ACT (minimum of Math 18, Reading 21, English 21) must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 90; Arithmetic: 90; Sentence Skills: 94; Algebra: 60. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring program orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Submit Caregiver Background Check paperwork.
- A four hour job shadow is strongly encouraged.

Curriculum
The Respiratory Therapist Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 70 credits.

Summer semester core classes are scheduled to begin mid-May and end mid-July.

FIRST SEMESTER

Catalog No.	Description	Credits
* 10-501-101	Medical Terminology	3
* 10-515-111	Respiratory Therapy Survey	3
10-801-196	Oral/Interpersonal Comm	3
* 10-806-177	Gen Anatomy & Physiology	4
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16

SECOND SEMESTER

Catalog No.	Description	Credits
* 10-515-171	Respiratory Therapeutics 1	3
* 10-515-173	Respiratory Pharmacology	3
* 10-515-174	Respiratory/Cardiac Physiology	3
10-801-136	English Composition 1	3
* 10-806-197	Microbiology	4
	SEMESTER TOTAL	16

SUMMER SEMESTER

Catalog No.	Description	Credits
* 10-515-172	Respiratory Therapeutics 2	3
* 10-515-175	Respiratory Clinical 1	2
	SEMESTER TOTAL	5

THIRD SEMESTER

Catalog No.	Description	Credits
* 10-515-112	Respiratory Airway Mgmt	2
* 10-515-113	Respiratory Life Support	3
* 10-515-176	Respiratory Disease	3
* 10-515-178	Respiratory Clinical 2	3
* 10-515-179	Respiratory Clinical 3	3
10-809-196	Intro to Sociology	3
	SEMESTER TOTAL	17

FOURTH SEMESTER

Catalog No.	Description	Credits
* 10-515-164	Clinical Simulation Review	2
* 10-515-180	Respiratory Neo/Peds Care	2
* 10-515-181	Respiratory/Cardio Diagnostics	3
* 10-515-182	Respiratory Clinical 4	3
* 10-515-183	Respiratory Clinical 5	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	70

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to www.nwtc.edu and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-515-111 RESPIRATORY THERAPY SURVEY ...examines the role of the Respiratory Therapist within the healthcare community. Reviews the ethical, legal, and regulatory principles that guide practice across diverse populations. Introductory patient assessment and critical thinking processes used in the development of respiratory care plans are explored. (Prerequisite: Accepted into Respiratory Therapy program)

10-515-112 RESPIRATORY AIRWAY MANAGEMENT ...provides a comprehensive exploration of airway management concepts and skills. (Prerequisites: 10-515-172, Respiratory Therapeutics 2; 10-515-174, Respiratory/Cardiac Physiology; 10-515-175, Respiratory Clinical 1)

10-515-113 RESPIRATORY LIFE SUPPORT ...focuses on management of adult ventilatory support. (Prerequisites: 10-515-172, Respiratory Therapeutics 2; 10-515-174, Respiratory/Cardiac Physiology; 10-515-175, Respiratory Clinical 1)

10-515-164 CLINICAL SIMULATION REVIEW ...diagnosis, management, and treatment received by cardiopulmonary patients. This course prepares students for the testing processes utilized by the National Board for Respiratory Care; all testing processes will be reviewed utilizing appropriate content. (Corequisites: 10-515-182, Respiratory Clinical 4; 10-515-183, Respiratory Clinical 5)

10-515-171 RESPIRATORY THERAPEUTICS 1 ...introduces the topics of medical gas administration and humidity and aerosol therapy. The learner will apply physics, math and patient assessment concepts to oxygen, aerosol and humidity. (Prerequisites: 10-515-111, Respiratory Therapy Survey; 10-806-177, General Anatomy & Physiology)

10-515-172 RESPIRATORY THERAPEUTICS 2 ...introduces therapeutic procedures including arterial puncture, bronchial hygiene, lung expansion therapy and pulmonary rehabilitation. (Prerequisite: 10-515-171, Respiratory Therapeutics 1)

10-515-173 RESPIRATORY PHARMACOLOGY ...examines basic pharmacology principles, drug dosage, and calculations. Medications for inhalation including mucolytivs, bronchodilators, anti-inflammatories. Also includes cardiac drugs, anesthetic drugs, neuromuscular blockers and antimicobials. (Prerequisite: 10-806-177, General Anatomy & Physiology)

10-515-174 RESPIRATORY/CARDIAC PHYSIOLOGY ...provides the student with an in-depth knowledge of the structure and function of the respiratory and circulatory systems necessary to function as a competent Respiratory Therapist. (Prerequisite: 10-806-177, General Anatomy & Physiology)

10-515-175 RESPIRATORY CLINICAL 1 ...introduces respiratory therapy practice in the hospital setting. Includes the development of skills such as basic therapeutics, patient assessment, medical record review, safety practices, patient interaction and communication. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 5 (required and/or simulated) competencies. The instructor may identify specific competencies to be addressed during this or any clinical. (Prerequisites: 10-515-170, Respiratory Therapy Survey; 10-515-171, Respiratory Therapeutics 1; Corequisites: 10-501-101, Medical Terminology; 10-515-172 Respiratory Therapeutics 2)

10-515-176 RESPIRATORY DISEASE ...exploration of signs, symptoms, causes, progression and treatment of obstructive, restrictive and infectious diseases or disorder of the body that affect the respiratory system. (Prerequisites: 10-515-111, Respiratory Therapy Survey; 10-806-177, General Anatomy & Physiology)

10-515-178 RESPIRATORY CLINICAL 2 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 12 (required and/or simulated) competencies. (Prerequisite: 10-515-175, Respiratory Clinical 1)

10-515-179 RESPIRATORY CLINICAL 3 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 19 (required and/or simulated) competencies. (Corequisite: 10-515-178, Respiratory Clinical 2)

10-515-180 RESPIRATORY NEO/PEDS CARE ...provides a comprehensive orientation to the field of neonatal and pediatric respiratory care to include fetal development, birth, neonatal physiology, pulmonary dynamics, abnormal cardiopulmonary conditions, diseases, noninvasive and invasive therapeutic interventions. (Prerequisite: 10-515-113, Respiratory Life Support)

10-515-181 RESPIRATORY/CARDIO DIAGNOSTICS ...advanced invasive and noninvasive diagnostic cardiopulmonary procedures including pulmonary function, hemodynamics and rescue medicine. (Prerequisites: 10-515-173, Respiratory Pharmacology; 10-515-176, Respiratory Disease; 10-515-113, Respiratory Life Support)

10-515-182 RESPIRATORY CLINICAL 4 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 26 (required and/or simulated) competencies. (Prerequisite: 10-515-179, Respiratory Clinical 3)

10-515-183 RESPIRATORY CLINICAL 5 ...focuses on the completion of respiratory therapy competencies and transition to employment. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in all of the (required and required/simulated) competencies. (Corequisite: 10-515-182, Respiratory Clinical 4)

Solar Energy Technology
Program Code 104824
Associate Degree
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Solar Energy Technology prepares students with a combination of electro-mechanical principles and knowledge of solar energy technologies to meet the needs of the emerging green energy workforce. The program will provide a skilled workforce of technicians who are able to design, install, operate and maintain solar electric and solar thermal systems for both residential and light commercial applications.

Program Outcomes
- Evaluate the energy use of commercial and residential buildings and perform site assessments for solar electric and solar thermal systems.
- Generate technical project proposals and estimates for solar electric and solar thermal systems.
- Read and comprehend mechanical blueprints.
- Upload and download information from remote and local networks to aid in the operation and maintenance of systems.
- Facilitate distributed generation agreements and connection to local utilities.
- Obtain zoning regulations and building permits.
- Design, install and maintain solar electric systems.
- Design, install and maintain solar thermal systems.
- Ensure compliance with the national electrical code.
- Provide training to user upon project completion.
- Install, troubleshoot, repair and modify mechanical and electrical systems including programmable controllers.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses required for mastery of algebra skills. For a description of algebra skills, see the Basic Education Section of this catalog.
- The student will either provide proof of having completed course work in Windows, Word and Excel or pass a proficiency test.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89 and College Math: 50 . Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment for diverse employers, such as renewable energy businesses, energy companies, equipment supply companies, oil and gas field service companies and utilities in the following areas:

Solar Electric Energy Technician: designs, estimates, installs, troubleshoots, repairs and modifies residential and/or commercial solar electric systems.

Solar Thermal Energy Technician: designs, estimates, installs, troubleshoots, repairs and modifies residential and/or commercial solar thermal systems.

Solar Site Assessor: conducts facility energy audit/assessments; is responsible for making recommendations regarding solar energy systems. Prepares cost estimates, energy analysis; is accountable for building long-term customer relationships.

Solar Sales Representative: provides consultations and assessments to potential customers. Manages the pipeline of contacts and opportunities within an assigned territory and deliver compelling presentations. Acts as the project manager for installation of systems and coordination of closeout.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Energy Analyst
- Journeyperson: Plumber, Electrician
- Project Manager
- Energy Engineer
- Environmental Consultant

The following certificates/technical diplomas may be applied toward this program:
904821 Renewable Energy-Solar

Curriculum
The Solar Energy Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-442-150	Machine Fabrication 1	1
10-480-101	Energy-Intro Renew & Sustain	4
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
	SEMESTER TOTAL	17

SECOND SEMESTER
Catalog No.	Description	Credits
10-482-120	Photovoltaics-Design & Site	2
10-482-126	Intro to Solar	4
10-620-140	Machine Wiring and Safety	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-102	Automation 3: PLC	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
	SEMESTER TOTAL	17

THIRD SEMESTER
Catalog No.	Description	Credits
10-482-125	Photovoltaics-Advanced	3
10-483-104	Solar Thermal Design & Site	2
10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
Catalog No.	Description	Credits
10-481-114	Intro to Energy Management	3
10-483-105	Solar Thermal-Advanced	3
10-483-106	Solar Advanced System Design	4
10-801-197	Technical Reporting	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	66

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-480-101 ENERGY-INTRO RENEW & SUSTAIN ...an overview of various renewable energy technologies and sustainable design practices and their current applications. Emphasis will be placed on energy consumption, efficiency, and conservation.

10-481-114 INTRO TO ENERGY MANAGEMENT ...defines the need for energy management as an integral part of society at all levels. The course will present the various opportunities available to energy management students through lectures, video and guest speakers.

10-482-120 PHOTOVOLTAICS-DESIGN & SITE ...learn steps to performing a site audit prior to installation of a PV system. Focus on defining the solar window, system site placement and sizing, lead analysis and energy efficiency. (Corequisite: 10-482-126, Intro to Solar)

10-482-125 PHOTOVOLTAICS-ADVANCED ...topics include batteries, wiring configurations, system diagramming, National Electrical Code, component selection, wiring, safety and system maintenance. (Prerequisites: 10-482-126, Intro to Solar; 10-660-104, DC 1: Intro; 10-660-105, DC 2: Circuits; 10-620-107, AC 1: Properties)

10-482-126 INTRODUCTION TO SOLAR ...an overview of the use of sunlight to produce heat and electricity and the practical and economical use of solar power and solar thermal systems. Learn the importance of energy efficiency and the economics of solar hybrid designs.

10-483-104 SOLAR THERMAL DESIGN & SITE ...learn steps to performing a site audit prior to installation of a solar thermal system. Focus on defining the solar window, system site placement and sizing, lead analysis and energy efficiency. (Prerequisite: 10-482-126, Intro to Solar)

10-483-105 SOLAR THERMAL-ADVANCED ...topics include safety, system design and layout, component selection, mounting collectors, plumbing and insulation copper pipe, storage tank installation, heat exchanger and circulation pump. (Prerequisite: 10-482-126, Intro to Solar)

10-483-106 SOLAR ADVANCED SYSTEM DESIGN ...troubleshooting and repairing renewable thermal and electric equipment; diagnosing faulty equipment; selecting replacement parts; preparing a detailed work order . (Prerequisites: 10-483-104, Solar Thermal Site Assessor; 10-482-120, Photovoltaics-Design & Site; 10-482-125, Photovoltaics-Adv; Corequisite: 10-483-105, Solar Thermal Installation)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Corequisite: 10-605-157, Power Electronics 1: Devices)

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, Current, Resistance, Ohm's Law, Power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of Capacitors and Inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-Loop versus Closed-Loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

Supply Chain Management
Program Code 101821
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-Free: (888) 385-6982.

Program Description

Supply Chain Management prepares students in all activities involved in the flow of goods from the point of origin to the point of consumption. Specific areas include transportation, inventory control, materials management, operations management, purchasing, international trade, customer service, and logistics management.

Program Outcomes

- Compare transportation modes and make decisions that will reflect savings for a company on fuel and oil price changes.
- Plan a product using a manufacturing resource planning process using enterprise resource planning (ERP) implementation best practices.
- Provide cost-effective requests for transportation services.
- Develop a global supply chain management perspective.
- Apply legal and ethical standards.
- Monitor customer service, quality, and cost performance.
- Demonstrate knowledge of the application of supply chain management concepts.
- Review and interpret importing and exporting documents and commercial transportation documents for a global supply chain shipment.
- Understand e-business logistics and fulfillment with b2b and b2c partners.
- Provide environment sustainability analysis for a role within a supply chain.
- Incorporate marketing and financial instruments to describe payment terms with global financial transactions.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Admission benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

The following certificates/technical diplomas may be applied toward this program:

- 901825, Supply Chain Management
- 908094, Leadership in Human Relations

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Buyer/Planner: coordinates activities between purchasing and manufacturing scheduling.

Claims Analyst: performs duties in the risk management process including over, short, and damage incidents and claims.

Customer Service Representative: communicates with customers in order to match customer needs with vehicle and driver availability, deals with customer inquiries, expedites freight, and tracks orders.

Dispatcher: assigns freight to routes, assigns vehicles and routes to drivers, and handles exceptions.

Inventory Analyst: compiles and manages information of amount, kind, and value of merchandise, material, or stock on hand to obtain optimum inventory balance, price, and costs.

Inventory Control Specialist: coordinates inventory issues with purchasing, production, and marketing; tracks current and forecasted levels of inbound and finished goods inventory.

Logistics Technician: communicates effectively with carriers and customers in 3PL environment, manages trailer needs, provides carrier assignments, monitors and traces customer shipments, and participates in carrier evaluation process.

Materials Planner: coordinates and expedites flow of manufacturing materials, parts, and assemblies with or between departments or plants in accordance with production and shipping schedules.

Master Production Scheduler: creates master production schedule and work orders; establishes priorities for current and forecasted customer demand; establishes availability or capacity of workers, parts, machinery, and equipment.

Purchasing Assistant: performs basic activities related to supplier evaluation and selection, product specifications, order quantities, and delivery requirements.

Shipping and Receiving Specialist: coordinates the flow of raw materials and finished goods to meet production and customer requirements and works with transportation carriers to assure timely and accurate pickup and delivery.

Transportation Planner/Coordinator: interfaces with customers and carriers in resolving pricing and delivery issues in 3PL environment, optimizes order consolidation and carrier selection considering cost, lead time, carrier capacity, and warehouse space constraints.

Warehouse Specialist: manages the flow of inventory into and out of a storage facility or distribution center, and works with owners of the inventory to meet inventory level and customer service needs.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Account Manager
- Materials Manager
- Traffic Manager
- Production and Inventory Control Manager
- Logistics Manager
- Purchasing Manager

Curriculum

The Supply Chain Management Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
10-104-110	Marketing Principles OR	3
10-104-148	Global Marketing	3
10-182-110	Lean Operations Mgmt	3
10-182-157	Logistics/Supply Chain Mgmt	3
10-804-123	Math w Business Apps	3
	SEMESTER TOTAL	16

SECOND SEMESTER

10-101-106	Accounting-for Non-Accountants OR	3
10-101-184	Business Finance/Budgeting	3
10-102-160	Global Business Mgmt	3
10-104-191	Customer Service	3
10-182-127	Purchasing	3
10-182-190	Transportation Mgmt	3
10-801-136	English Composition 1	3
	SEMESTER TOTAL	18

THIRD SEMESTER

10-102-100	Bus and Info Tech Occup Prep	1
10-182-120	Enterprise Resource Plan/Cont	3
10-182-160	Global Supply Chain Mgmt	3
10-801-196	Oral/Interpersonal Comm	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

10-102-104	International Business Prac	3
10-182-131	Negotiations	3
10-182-199	Supply Chain Intern Practicum OR	2
10-182-197	Sup Chain Field Research	2
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
	Elective	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	67

SUGGESTED ELECTIVES

10-196-189 Team Building/Problem Solving
10-102-184 Global Business Cultures

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: Math w Business Apps)

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-102-104 INTERNATIONAL BUSINESS PRACTICE FIRM ...(IBPF) students will start up their own business and sell and buy products in a virtual classroom environment. Each student will play the role of a manager.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global marketing, and global supply chain.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-148 GLOBAL MARKETING ...tools necessary for the student to understand the risks, rewards, and the technical aspects of doing business in a global environment.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, six sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-182-120 ENTERPRISE RESOURCE PLAN/CONTROL ...enterprise resource planning (ERP), benefits of ERP implementation in an organization, business process alignment, value chain process, technology and international considerations, successful change management, and ERP project management.

10-182-127 PURCHASING ...role of purchasing in business, industry, and the community; legal and ethical aspects of purchasing including systems, staffing, price/cost analysis, contract administration, and dealing with vendors.

10-182-131 NEGOTIATIONS ...techniques and skills used in bargaining to maximize a company's profits and competitiveness. Appropriate for learners in any Business and Information Technology program as well as for non-program students.

10-182-157 LOGISTICS/SUPPLY CHAIN MANAGEMENT ...integrated logistics supply chain, dimensions of logistics and supply chain management, demand management and customer service, procurement and supply management, global logistics, inventory management, warehousing, transportation and third-party logistics.

10-182-160 GLOBAL SUPPLY CHAIN MANAGEMENT ...methods of foreign market entry, international contracts, INCOTERMS 2000, terms of payment, international commercial documents, international insurance, export packaging, customs clearance, and global supply chain logistics infrastructure.

10-182-190 TRANSPORTATION MANAGEMENT ...importance of transportation, transportation regulations/public policy, overview of transportation providers (motor carriers, railroads, air carriers, inter-modal and special carriers), costing/pricing transportation, transportation documentation, transportation management technology systems/processes.

10-182-197 SUPPLY CHAIN FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-182-199 SUPPLY CHAIN INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Surgical Technologist
Program Code 315121
Technical Diploma
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Surgical Technologist prepares and maintains a sterile field before and during surgery, passes instruments and supplies to the surgeon, provides safe patient care, and prepares instruments for operative procedures.

Program Outcomes
- Apply health science principles to the peri-operative environment.
- Apply principles of disinfection and sterilization to the surgical environment, equipment, and instrumentation.
- Maintain principles of aseptic technique in the surgical environment.
- Prepare the operation room by gathering equipment and supplies.
- Pass instruments, equipment, and supplies.
- Provide a safe, efficient, and supportive environment for the peri-operative patient.
- Anticipate the sequence of events during surgical procedures.
- Prepare and manage medications and solutions.
- Function as an ethical, legal, and moral member of the healthcare team within the surgical technologist's scope of practice.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Clinical Experience
Students will be required to purchase scrub suits, pay for liability insurance for each course, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances and participate in early morning clinicals. Students must be able to reach, bend, and stand for long periods of time (2 to 4 hours), as well as lift, push, and pull (50 pounds).

Employment Potential
A graduate of this program will have the potential for employment in a hospital, out patient surgery, private practice, or clinical setting as a:
- Surgical Technologist
- Central Supply Technician
- Claims Approver
- Private Scrub Technologist

Board/Certification Examinations
Graduates of the Surgical Technologist program are required to take the Surgical Technology National Certification Exam.

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admissions Assessment or equivalent or ACT assessment taken within the last three years. (For a list of equivalents, please contact a counselor.)

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary or minimum individual ACT scores of Math: 13; Reading: 15; English: 18 must be achieved. Students must receive the following scores prior to program entry. Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 74. Remediation options are available to reach required scores. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory program orientation.
- Complete physical examination within three months before entering the program and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Submit Caregiver Background Check paperwork.
- Complete a Functional Abilities Inventory.

Curriculum
The Surgical Technologist Technical Diploma is a three-semester program. Upon graduation, a student will have completed 34 credits.

First semester courses can be taken prior to being admitted into the Surgical Technologist program.

FIRST SEMESTER
Catalog No.	Description	Credits
* 10-501-101	Medical Terminology	3
* 31-509-302	Human Body in Health & Disease	3
* 31-512-326	ST: Infection Control	1
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	9

SECOND SEMESTER
Catalog No.	Description	Credits
* 31-512-327	ST: Introduction	4
* 31-512-328	ST: Fundamentals 1	4
* 31-512-329	ST: Fundamentals 2	2
* 31-512-330	ST: Clinical 1	3
	SEMESTER TOTAL	13

THIRD SEMESTER
Catalog No.	Description	Credits
* 31-512-331	ST: Surgical Procedures	4
* 31-512-332	ST: Clinical 2	4
* 31-512-334	ST: Clinical 3	4
	SEMESTER TOTAL	12
	TOTAL CREDITS	34

CURRICULUM NOTE
* No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

Prior to second semester coursework, students must complete 10-501-101, Medical Terminology; 31-509-302, Human Body in Health & Disease; and 31-512-326, ST: Infection Control.
Prior to third semester coursework, students must complete 31-801-385, Communicating-Writing and 31-801-386, Communicating-Effectively.

Accreditation
The Surgical Technologist Program is accredited by Commission on Accreditation of Allied Health Education Programs in collaboration with the Accreditation Review Committee on Education in Surgical Technology
7108-C South Alton Way, Suite 150
Englewood, CO 80112
(303) 694-9262
FAX (303) 689-0518

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY
...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

31-512-327 ST: INTRODUCTION
...provides the foundational knowledge of disinfection, sterilization, infection control, and asepsis. Legal and ethical issues encountered in the healthcare environment are explored. Simulated laboratory practice enables the learner to develop beginning technical skills. (Prerequisites: 31-509-302, Human Body in Health & Disease; 10-501-101, Medical Teminology; Accepted into the Surgical Technologist Program; Corequisite: 31-512-326, ST: Infection Control)

31-512-328 ST: FUNDAMENTALS 1
...includes the basic clinical skills needed by the Surgical Technologist in the scrub role. Learners develop skills in identifying basic instrumentation, supplies, drains, catheters, dressings and sponges. Includes practice experience in creating a sterile field, draping, passing instruments and supplies, performing counts and preparing supplies. (Prerequisites: 31-509-302, Human Body in Health & Disease; 10-501-101, Medical Terminology; 31-512-326, ST: Infection Control)

31-512-329 ST: FUNDAMENTALS 2
...builds upon and reinforces the role of the Surgical Technologist as a member of the operating room team. Discusses care of the patient before, during and after surgery with emphasis on surgical wounds, wound closure material, and vital signs. Includes lecture and lab experiences. (Corequisites: 31-512-327, ST: Introduction; 31-512-328, ST: Fundamentals 1)

31-512-330 ST: CLINICAL 1 ...apply basic surgical theories, principles, and procedural techniques in the operating room. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel. (Corequisites: 31-512-327, ST: Intro to Surg Tech; 31-512-328, ST: Fundamentals 1)

31-512-331 ST: SURGICAL PROCEDURES
...provides the foundational knowledge of surgical core and specialty procedures. Examines pathophysiology, diagnostic interventions, and surgical interventions for a variety of surgical procedures. Incorporates integration of basic health sciences and technical knowledge to complete a plan of action for a surgical procedure. (Prerequisites: 31-512-329, ST: Fundamentals 2; 31-512-330, ST: Clinical 1)

31-512-332 ST: CLINICAL 2
...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures. (Prerequisites: 31-512329, ST: Fundamentals 2; 31-512-330, ST: Clinical 1; Corequisite: 31-512-331, ST: Surgical Procedures)

31-512-334 ST: CLINICAL 3 ...enhances the student's technical experience and employee skills. Serves as a transition between student and employee. Application of advanced skills for the entry-level surgical technologist in the clinical setting. (Corequisites: 31-512-332, ST: Clinical 2; 31-512-331, ST: Surgical Procedures)

Utilities Engineering Technology
Program Code 104681
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description

Utility Engineering Technology prepares students for employment as utility system engineering technicians, designers, coordinators, planners, construction supervisors, project managers, estimators and equipment maintenance technicians, substation test (relay) technicians, in the utility industry from power generation through transmission and distribution.

Program Outcomes

- Identify and apply the necessary safety procedures required to work safely in the electrical and gas utility industry.
- Acquire an understanding of the utility industry from generation through distribution.
- Perform standard testing of electrical distribution equipment.
- Plan, manage and implement utility projects.
- Explore the overall operation and control of utility generation and distribution equipment.
- Conduct nondestructive and predictive testing of electrical distribution equipment.
- Examine and apply knowledge of gas, electricity, electronics, hydraulics, electric motors and mechanical systems.
- Draw and read technical schematics and diagrams.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Construct ladder diagrams, flow charts, timing diagrams and basic computer control algorithms for machine control.
- Perform electrical/mechanical assembly/disassembly, repair, and calibrate components by selecting tools and equipment and following procedures.
- Implement the basic fastening skills related to machine fabrication and assembly requirements.
- Apply electrical skills to troubleshoot control and operator panels.
- Apply gas diagnostic tools to troubleshoot and resolve system problems.
- Apply programming languages to the control of single programmable controllers and industrial networks.
- Apply computer hardware/software applications to utility systems for design and coordination.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.

The following certificates/technical diplomas may be applied toward this program:

904561, Industrial Maintenance

Employment Potential

Relay Technologist: ensures safe and effective operation of transmission, distribution and generation facilities by calibrating, testing, maintaining and repairing protective and auxiliary relays, relay systems and associated communication equipment.

Systems Control & Relay Technician: installs, tests, adjusts, calibrates, repairs, and troubleshoots electrical power systems, protective relays, controls, alarms, metering, remote controls and telemetering equipment. Coordinates the installation and modification of protective relays with engineers.

Substation Technician: installs, tests, adjusts and repairs power transformers, loads tap changers, potential transformers, current transformers, high voltage switchgear, battery and charger systems and control equipment used in substations. Evaluates transformer oil analysis and conducts high-potential tests, Doble tests, primary injections, breaker trip tests, contact resistances tests, etc.

Distribution Systems Designer: designs systems for construction and maintenance of natural gas and electric systems. Develops construction plans; prepares cost estimates, creates material requirements, processes work requests and prepares documents.

Power Plant Instrument Technician: analyzes and repairs electrical and instrument/controls hardware and software in a power generation plant. Troubleshoots, maintains, and repairs generator excitation systems, synchronization systems, and voltage regulators.

Relay Technologist: ensures safe and effective operation of transmission, distribution and generation facilities by calibrating, testing, maintaining and repairing protective and auxiliary relays, relay systems and associated communication equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Utilities Construction Project Manager
- Power Plant Maintenance Supervisor
- Substation Design Supervisor
- Substation Preventive Maintenance Supervisor
- Electro-Mechanical Technician
- Electronics Technician
- Field Service Technician

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 79; Arithmetic: 101; Sentence Skills: 89; College Math: 50 . Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Curriculum

The Utilities Engineering Technician Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-614-113	2D Essentials	2
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Circuit Theorems	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
10-442-100	Metal Fabrication 1	2
10-468-100	Utility Safety	2
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
	SEMESTER TOTAL	17

THIRD SEMESTER

Catalog No.	Description	Credits
10-468-101	Utility Power Systems Coor	3
10-468-105	Utility Generation Systems	2
10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-801-136	English Composition 1	3
	SEMESTER TOTAL	16

FOURTH SEMESTER

Catalog No.	Description	Credits
10-468-102	Utility Project Execution	3
10-468-103	Utility Systems Maintenance	3
10-468-104	Utility Systems-Natural Gas	3
10-606-113	CAD	2
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
	SEMESTER TOTAL	17
	TOTAL CREDITS	68

For complete program information, go to: www.nwtc.edu

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-442-100 METAL FABRICATION 1 ...safety and introduction to basic metal fabrication tools and equipment utilizing precision measuring tools, geometric nomenclature, basic layout and assembly skills along with polygon construction, and triangulation from scale drawings. (Prerequisite: 10-614-113, 2D Essentials)

10-468-100 UTILITY SAFETY ...learn utility system safety terminology, definitions and practices. Define safety responsibility, vehicle laws, rules and regulations. Identify substation components; demonstrate safe work procedures on a simulated energized system using testing tools. (Prerequisite: 10-660-106, DC 3: Circuit Theorems; Corequisites: 10-660-107, AC 1: Properties; 10-660-108, AC 2: Reactance; 10-660-109 AC 3: RLC Circuits)

10-468-101 UTILITY POWER SYSTEMS COORDINATION ...learn utility systems interconnection from generation through distribution. Includes: powerhouse, hydroelectric, wind, solar and nuclear, EHV and HV transmission, the utility grid, device coordination, metering, protective relays, fuses, breakers, and fault current interrupting. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-605-157, Power Electronics 1: Devices; 10-605-158, Power Electronics 2: Drives; 10-605-159, Power Electronics 3: Drives)

10-468-102 UTILITY PROJECT EXECUTION ...develop the utility project management skills necessary to manage and execute a construction project from concept through commissioning. Learn project utility planning, design and execution skills with hands-on methods and real world applications. (Prerequisite: 10-468-101, Utility Power Systems Coordination)

10-468-103 UTILITY SYSTEMS MAINTENANCE ...learn utility systems testing methods and hands-on experience with the tools necessary to provide preventive and predictive maintenance services for electrical distribution equipment. Utilize standard utility testing tools, non-destructive testing tools and predictive failure analysis methods. (Prerequisite: 10-468-101, Utility Power Systems Coordination)

10-468-104 UTILITY SYSTEMS-NATURAL GAS ...learn natural gas utility systems configuration from supply sources to local distribution and customer loads. Train on basic gas utility field installation and service practices. (Prerequisites: 10-468-101, Utility Power Systems Coordination; 10-442-100, Metal Fabrication 1)

10-468-105 UTILITY GENERATION SYSTEMS ...learn utility generation systems types, configuration and basic operation and maintenance of generation systems. Includes; powerhouse, gas turbine, hydroelectric, wind, solar and nuclear. Emphasis of coal fired & gas generation systems (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-605-157, Power Electronics 1: Devices; 10-605-158, Power Electronics 2: Drives; 10-605-159, Power Electronics 3: Drives)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Corequisite: 10-605-157, Power Electronics 1: Devices)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisite: 10-607-119, Civil Drafting Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-614-113 2D ESSENTIALS ...an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning. Knowledge integral to Model Building.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, Compound DC, AC Induction, and Specialty machine performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, Current, Resistance, Ohm's Law, Power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of Capacitors and Inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC System, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-Loop versus Closed-Loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

Viticulture *(pending WTCS approval June 2011)*
Program Code 103201
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus as well as the partner colleges listed below. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Viticulture Associate Degree will train both current and future employees of vineyards in the grape growing industry. Students will gain viticulture skills such as planting, pruning, training, harvesting, gathering, sustainability, integrated pest management (IPM), and storing of grapes or other fruits that will be turned into wine using the fermentation process. NWTC will partner its resources with the Viticulture and Enology Science and Technology Alliance (VESTA). The viticulture technical courses (designated with VIN) will be taught in conjunction with VESTA through a combination of online learning and field experiences. The Viticulture Program will provide students with hands-on field experiences at local vineyards that focus on the principles and best practices of maintaining a vineyard through seasonal changes.

Program Outcomes
- Manage all part-time and seasonal vineyard workers.
- Maintain records of all vineyard operation activities.
- Assist wine maker in crop load management, harvest coordination and execution.
- Monitor the vineyard regarding nutrient status, grape diseases, insect, fungus, weeds, and other pests.
- Maintain records of all viticultural monitoring activities.
- Practice IPM (Integrated Pest Management).
- Recommend and plan any large scale changes in vineyard plantings, specifically cultivars and selection of the site.
- Plan and assist in irrigation scheduling and operation.
- Plan and assist in general property maintenance.
- Operate vineyard machinery safely.

Employment Potential
A graduate of this program will have the basic skills necessary to own and operate or be employed at a vineyard as a:
- Vineyard Manager
- Vineyard Worker

With additional education and/or work experience, graduates may find other opportunities for employment.
- Pest Management Industry-Crop Scout
- Green Industry-Greenhouse, Propagation
- Chemical/Pesticide Industry

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Note
- NWTC has partnered with Michigan State University, Missouri State University, Missouri State University-West Plains, Northeast Iowa Community College, Redlands Community College, Rend Lake College, South Plains College, Arkansas Tech University-Ozark Campus, Kent State University-Ashtabula, Highland Community College, Central Lakes College and Ivy Tech Community College to offer an Associate Degree in Viticulture. The partnership is formally referred to as the Viticulture and Enology Science and Technology Alliance, or VESTA. The partnered colleges individually deliver VESTA classes through various online delivery formats.
- Students desiring to earn an Associate Degree in Viticulture must apply for admission to NWTC and must take a minimum of 25% of technical core courses at NWTC.
- The VESTA online courses, identifiable by "VIN" in front of the course code have a separate admission and registration process.
- All VESTA courses require a practicum. Practicum sites throughout the state are listed on the VESTA website. Students may propose a new practicum site if they find a willing and eligible vineyard.
- Some courses have a minimum age requirement.
- Further information on VESTA can be found on the website www.vesta-usa.org.

Curriculum
The Viticulture Associate Degree program is a two-year, four-semester program. Upon graduation, a student will have earned 60 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
VIN 111	Intro to Viticulture	3
BOT 135	Botany	5
* 10-090-101	Intro to Organic Systems	3
* 10-145-170	Micro-Business: Feasibility	3
	Elective	2
	SEMESTER TOTAL	16

SECOND SEMESTER
VIN 113	Winter Viticulture Technology	2
VIN 114	Spring Viticulture Technology	2
VIN 211	Integrated Pest Management	2
* 10-090-102	Org Soils, Nutrients, Comp	1
10-804-118	Interm Algebra w Apps	4
10-806-112	Principles of Sustainability	3
	SEMESTER TOTAL	14

THIRD SEMESTER
VIN 115	Summer/Fall Viticulture Tech	2
VIN 213	Midwest Vineyard Management	2
* 10-145-171	Micro-Business: Business Plan	3
10-801-136	English Composition 1	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
VIN 190	Vineyard Safety	1
VIN 293	Soils for Viticulture	3
* 10-090-105	Org Hort/Fruits, Vegs, Herbs	1
* 10-090-107	Organic Ag and Food Marketing	1
10-801-196	Oral/Interpersonal Communication	3
10-809-199	Psychology Of Human Relations	3
	Elective	2
	SEMESTER TOTAL	14
	TOTAL CREDITS	60

CURRICULUM NOTE
 * These courses must be taken at NWTC to receive an Associate Degree.

SUGGESTED ELECTIVES
- Any courses from the Enology program
- Organic Specialty Crops & Animals, 10-090-106

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-090-101 INTRO TO ORGANIC AGRICULTURE SYSTEMS ...discover organic principles and the "systems" approach. Explore soils, livestock, cropping, gardening, marketing, finances, transitions, certification requirements. Experience new techniques, meet organic farmers. Write organic farm plan. Study sustainable options.

10-090-102 ORGANIC SOILS, NUTRIENTS, COMPOSTING ...functional soil is the foundation of organic systems, build robust healthy soil through organic matter, micro-organisms, and nutrient cycling. Explore composting techniques, organic fertilizer sources, soil fertility testing, balancing.

10-090-105 ORGANIC HORTICULTURE/ FRUITS, VEGETABLES, HERBS ...whether gardening on a small scale or using commercial greenhouses and fields, plan plantings, control pests, diseases and weeds, all using best organic practices. Create a harvest and marketing plan.

10-090-107 ORGANIC AG AND FOOD MARKETING ...create a business plan to analyze market need, sell your organic products. Whether unique value-added products, direct local services or commodity based dairy, crops, discover best options, avenues for success.

10-145-170 MICRO-BUSINESS: FEASIBILITY ...learn about entrepreneurship; the lifestyle and demands; skill sets required; hear entrepreneurs' stories of success and failure; tour start-ups in the community and determine the feasibility of your business concept.

10-145-171 MICRO-BUSINESS: BUSINESS PLAN ...focused on marketing and finance; learn tactics for market penetration, advertising; PR; learn from guest speakers from various media; discover sources of capital; learn financial recordkeeping; write your business plan.

BOT 135 BOTANY ...a survey of the plant kingdom, including plant cells and tissues and the ecology, morphology, physiology and life cycles of representative plants of each division.

VIN 111 INTRO TO VITICULTURE AND VINEYARD ESTABLISHMENT ...learn about viticulture and vineyard establishment. Topics include: cultivar selection, site preparation, equipment, site selection, first season establishment, vine development and training, trellis systems, weed control, vine disease control, and pruning. Students partner with approved vineyards for field experience.

VIN 113 WINTER VITICULTURE TECHNOLOGY ...practical experience in winter vineyard operations. Students partner with approved vineyards for required field experience which will serve as work experience for those seeking employment in commercial viticulture.

VIN 114 SPRING VITICULTURE TECHNOLOGY ...practical experience in spring vineyard operations. Students are required to partner with approved vineyards for field experience which will serve as work experience for those seeking employment in commercial viticulture.

VIN 115 SUMMER/FALL VITICULTURE TECHNOLOGY ...practical experience in summer/fall vineyard operations. Students are required to partner with approved vineyards for field experience which will serve as work experience for those seeking employment in commercial viticulture.

VIN 190 VINEYARD SAFETY ...learn safety procedures specific to grape growing including a general history of agricultural safety and health issues, ergonomics, OSHA safety rules and safety issues and concerns.

VIN 211 INTEGRATED PEST MANAGEMENT ...learn how to manage normal cultural practices such as planting, fertility, harvesting, and pruning as well as managing the insect, disease, and weed programs that occur either regularly or sporadically.

VIN 213 MIDWEST VINEYARD MANAGEMENT ...study commercial grape growing in the United States. Topics include cultivars, vine nutrition, irrigation, canopy management, pests, maturity, sampling and harvest, balanced pruning/cropping and cold injury.

VIN 293 SOILS FOR VITICULTURE ...explore soil properties and behavior, and their influence on wines. This course focuses not only on growth and production, but on the long-term effect of viticulture on soil quality and the wider environment.

Web Development
Program Code 101522
Associate Degree

This program is fully eligible for financial aid.

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

Program Description
The Web Development program prepares learners to integrate web technologies to support internet-based business systems and websites using concepts in design and programming.

Program Outcomes
- Develop, build, and configure dynamic and interactive websites or applications.
- Produce effective, web-optimized graphics and animation.
- Ensure cross-platform and cross-browser website usability.
- Create functional and efficient website navigation.
- Create a database design and effective interface to support a web application and a variety of web campaigns.
- Understand the infrastructure required to support a robust website or application.
- Understand the importance of and techniques for search engine optimization.
- Explore analytical tools available to measure effectiveness of websites and web campaigns.
- Develop an approach to remain current with web development trends.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Completed one year of high school algebra or equivalency.
- Computer familiarity and ability to use a keyboard and mouse.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program: Reading Comprehension: 95; Arithmetic: 66; Sentence Skills: 89; Algebra: 86. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment as a:

Web Developer: designs, implements, and maintains internet and internet web applications/sites.

Web Technical Support: develops and maintains internal system support processes and coordinates the integration of the web with other computer systems.

Web Analyst: track and analyze key business metrics related to web activities.

Some positions may require additional education and/or work experience.

The following certificates/technical diplomas may be applied toward this program:
- 901522, Web Application Programming
- 901352, Web Design

Curriculum
The Web Development Associate degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-150-144	IT:Network:Operating Sys Fund	3
10-152-185	Website Coding	3
10-154-125	IT:Web:Database Development	3
10-804-133	Math & Logic	3
	SEMESTER TOTAL	16

SECOND SEMESTER
10-135-150	Web Graphic Design	3
10-135-152	Web Animation Design	3
10-152-184	IT:Web:Programming-SQL	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	18

THIRD SEMESTER
10-102-100	Bus and Info Tech Occup Prep	1
10-135-115	Online Search Strategies	3
10-135-151	Website Design	3
10-152-180	IT:Web:Scripting-Javascript	3
10-152-182	IT:Web:Scripting-PHP	3
10-809-103	Think Critically & Creatively	3
	SEMESTER TOTAL	16

FOURTH SEMESTER
10-135-180	Web Campaign Management	3
10-135-185	Web Emerging Technologies	2
10-135-199	Web Dev Internship Practicum OR	2
10-135-197	Web Dev Field Research	2
10-152-183	IT:Web:Scripting-ASP.Net	3
10-809-172	Race Ethnic & Diversity	3
10-809-195	Economics	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	66

For complete program information,
go to: www.nwtc.edu

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self exploration, career planning, career placement, job seeking skills.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-135-115 ONLINE SEARCH STRATEGIES ...understanding of how search engines relate to the success of a website or web-based business by investigating the primary search engines and the tactics that can be used to increase visibility within search engines.

10-135-150 WEB GRAPHIC DESIGN ...(Adobe Photoshop) design and prepare graphics for the web including graphics for backgrounds, rollover effects, navigation, and badges. Also includes techniques for optimization and transparency. (Prerequisites: 10-111-101, Macintosh Image Editing; 10-152-185, Website Coding)

10-135-151 WEBSITE DESIGN ...(Adobe Dreamweaver) use standards based XHTML and CSS to design, develop and deploy websites; including: browser compatibility, FTP, forms, multi-media, RSS, and site management. (Prerequisite: 10-135-150, Web Graphic Design)

10-135-152 WEB ANIMATION DESIGN ...(Adobe Flash) vector animation, create, import source material, incorporate into flash movies, use Stage and Timeline, motion, shape-tweening, add sound to buttons, use Action Script, and test flash.

10-135-180 WEB CAMPAIGN MANAGEMENT ...build, execute, analyze and report upon web campaigns with the use of databases. Explore techniques and tools to monitor campaigns. Execute post-campaign measurements and ROI analysis.

10-135-185 WEB EMERGING TECHNOLOGIES ...review upcoming web technologies. Learn strategies to remain current in web technology trends. Explore a variety of trusted sources for trend information.

10-135-197 WEB DEVELOPMENT FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-135-199 WEB DEVELOPMENT INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Pre/Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-150-144 IT:NETWORK:OPERATING SYSTEM FUNDAMENTALS ...installation of Windows client, Windows Server and Linux Server operating systems. Basic networking topologies and protocol fundamentals. Application installation including Simple Mail Transport Protocol, File Transfer Protocol, and Web server technologies.

10-152-180 IT:WEB:SCRIPTING-JAVASCRIPT ...integrate Javascript into interactive HTML pages, create user-defined functions, complete form validation, use objects within the Document Object Model, manipulate cookies, create image rollovers, debug code, and test browser compatibility. (Prerequisite: 10-152-185, Website Coding)

10-152-182 IT:WEB:SCRIPTING-PHP ...use PHP, MySQL, XHTML, CSS and Apache to create standards based websites. PHP is used to connect to a MySQL database and retrieve site content. PHP is also used to organize the XHTML. (Prerequisite: 10-154-125, IT:Web:Database Development)

10-152-183 IT:WEB:SCRIPTING-ASP.NET ...build interactive, database-driven websites with ASP.NET and C# with Visual Studio, handling web form events, using ASP.NET controls, designing master pages, managing state, and interacting with databases with ASP.NET data-bound controls. (Prerequisites: 10-154-125, IT:Web:Database Development; 10-152-180, IT:Web:Client Script-Javascript)

10-152-184 IT:WEB:PROGRAMMING-SQL ...write queries in a relational database: creating tables, setting primary/foreign keys, populating tables, manipulating data and reporting. Explore join types, stored procedures, functions, and database administration SQL statements. (Prerequisite: 10-154-125, IT:Web:Database Development)

10-152-185 WEBSITE CODING ...write code for functionality and design of web page text, hyperlinks, images, tables, and forms using (X) HTML and CSS. Apply and validate coding standards. Test browser function and user accessibility.

10-154-125 IT:WEB:DATABASE DEVELOPMENT ...database uses, database terminology, analyzing information requirements, data models, database design phases, entity relationships, normalization processes, database management systems, database objects, development environments, creating tables, writing queries using SQL, testing.

Welding
Program Code 314421
Technical Diploma

This program is fully eligible for financial aid.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361. Toll-Free: (888) 385-6982.

Program Description
Welding prepares students to join metal by applying heat and pressure to join metal sections together to form a permanent bond. Welders plan layouts or work from blueprints, drawings, or other specifications.

Program Outcomes
- Be successfully employed in the welding industry.
- Perform procedures using plasma, carbon arc, oxyacetylene processes.
- Perform procedures using the Shielded Metal Arc Welding process (S.M.A.W).
- Perform procedures using the Gas Metal Arc Welding process (G.M.A.W).
- Perform procedures using the Gas Tungsten Arc Welding process (G.T.A.W).
- Perform procedures using the Flux Core Arc Welding process (F.C.A.W).
- Perform procedures using the Submerged Arc Welding process (S.A.W).
- Perform welding procedures using the Metal Core process.
- Interpret mechanical drawings.
- Fabricate projects from blueprints and sketches.
- Perform basic mathematical computations.
- Identify various ferrous and non-ferrous materials.
- Communicate with co-workers and supervisors.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 75; Arithmetic: 72; Sentence Skills: 84. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment as a Maintenance Welder, Qualified Welder, Structural Welder, Welder/Fabricator, and Pipe Welder. In these jobs, the graduate will build and repair metal components using basic knowledge of blueprints, metallurgy, and layout while applying the major welding processes used by industry; and will be trained in code welding according to the AWS (American Welding Society) and ASME (American Society of Mechanical Engineers) with testing provided on campus. Other positions might include Construction Trades Welder, Ironworker Trades Welder, Millwright, Sheetmetal Trades Welder, and Pipe Trades Welder. People in many apprenticeship programs are required to take welding classes as part of their training.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Journeylevel Welder
- Welding Inspector
- Welding Supervisor
- Journeylevel Welder/Fabricator

Certification
All NWTC Welding Program instructors are certified welders.

Curriculum
The Welding Technical Diploma is a one-year, two-semester program. Upon graduation, students will have completed 35 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-804-101	Math 1-Trades	2
31-421-334	Blueprint Reading I	2
31-442-301	Welding-Cutting/Visual	1
31-442-316	Welding-Shielded Metal Arc	5
31-442-317	Welding-Gas Metal Arc	5
31-442-335	Metal Fabrication I	3
	SEMESTER TOTAL	18

SECOND SEMESTER

Catalog No.	Description	Credits
31-421-333	Blueprint Reading II	2
31-422-310	Metallurgy	2
31-442-321	Welding-Gas Tungsten Arc	5
31-442-327	Welding-Flux Core	5
31-442-334	Metal Fabrication II	2
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	17
	TOTAL CREDITS	35

For complete program information,
go to: www.nwtc.edu

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-421-333 BLUEPRINT READING II
...develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings. (Prerequisites: Accepted into Welding program; 31-421-331, Blueprint Reading 1)

31-421-334 BLUEPRINT READING I
...orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, welding symbols, weld joint nomenclature, welding joint geometry, metric conversion and interpretation of fabrications from prints. (Prerequisite: Accepted into Welding program)

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-301 WELDING-CUTTING/VISUAL
...visual inspection of weld and cut edges, manual and machine oxy fuel gas cutting, air carbon arc cutting, plasma arc cutting, and mechanical cutting methods. (Prerequisite: Accepted into Welding program)

31-442-316 WELDING-SHIELDED METAL ARC ...safety, SMAW equipment, materials, accessories, inspection, weld types, joints, and position. (Prerequisite: Accepted into Welding program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-317 WELDING-GAS METAL ARC (GMAW) ...welding safety, GMAW equipment/ set up, joint details and distortion control, GMAW weld faults, welding metallurgy, and weld symbol interpretation. (Prerequisite: Accepted into Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-321 WELDING-GAS TUNGSTEN ARC ...perform gas tungsten arc welding (GTAW) in all positions, on plain carbon steel, aluminum, and 3XX stainless steel. (Prerequisite: Accepted into the Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-327 WELDING-FLUX CORE
...safety, equipment, accessories, inspection and repairs, weld types and joint nomenclature, surface welds and all position fillet and groove welds. (Prerequisite: Accepted into Welding program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-334 METAL FABRICATION II
...advanced metal fabrication tools developing assembly and sub-assemblies from working prints using various fabrication processes. Additionally, rigging and lifting, distortion control, and basic CNC programming will be incorporated. (Prerequisites: Accepted into the Welding OR Marine Construction program; 31-442-335, Metal Fabrication 1)

31-442-335 METAL FABRICATION I
...safety and introduction to basic metal fabrication tools and equipment utilizing precision measuring tools, geometric nomenclature basic layout and assembly skills along with polygon construction, and triangulation from scale drawings. (Prerequisite: Accepted into the Welding or Marine Construction program)

Wind Energy Technology
Program Code 104821
Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call toll-free: (888) 385-6982. This program is fully eligible for financial aid **only** through Lakeshore Technical College.

Program Description

The wind energy industry is the fastest growing segment of renewable energy production. The U.S. and Canadian commercial wind farms are experiencing annual growth of 25%. Employers seek skilled technicians for operation and maintenance activities in local wind farm settings. There is also intense demand for upper-level technicians within U.S. and international wind turbine manufacturers; these include installation technician, quality control technician, and warranty and commissioning technicians. Operation and maintenance positions remain with a given wind farm location; other technicians travel extensively with the development of new wind farms and repair/retrofitting of wind farms around the world.

Program Outcomes

- Install, test, service and repair wind turbine components.
- Troubleshoot and maintain control and PLC systems.
- Troubleshoot and maintain SCADA systems.
- Wear PPE for climbing and identify safety practices for climbing.
- Practice safe wind turbine tower climbing skills.

Requirements for Program Entry

- Completed application at Lakeshore Technical College - www.gotoltc.edu or (888) 468-6582.
- Official transcript(s) from high school and any other post-secondary institution(s).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension, 74; Arithmetic, 100; Sentence Skills: 86; Algebra: 55. Contact NWTC Assessment Center for remediation assistance.
- Attendance at mandatory orientation (at LTC) where students will be asked to demonstrate their ability to climb safely and comfortably to a height of 125 feet.

Employment Potential

- Wind Turbine Technician/Mechanic/Tower Climber
- Installation Technician
- Operation and Maintenance Technician
- Wind Farm Maintenance Manager

About Shared Programs

- Contact Lakeshore Technical College regarding all benchmarks.
- Limited space available for enrollment.
- Summer courses are offered only at LTC.
- Students may take NWTC courses without being enrolled in the program.

Curriculum

The Wind Energy Technology Associate Degree is a two-year, six-semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus during the fall and spring semesters and will take part in summer semester courses at LTC. Upon graduation, a student will have completed 69 credits.

FIRST SEMESTER

Catalog No.	Description	Credits
10-482-130	Energy-Intro to Wind	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-804-118	Interm Algebra w Apps	4
	SEMESTER TOTAL	12

SECOND SEMESTER

10-620-121	Mechanics 1: Basic	1
10-620-140	Machine Wiring and Safety	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-660-102	Digital 2: Sequential	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-664-102	Automation 3: PLC	1
10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
	SEMESTER TOTAL	16

SUMMER SEMESTER

10-413-110	Energy Introduction to	2
10-449-113	Wind Technician Health & Sfty	2
10-482-120	Wind Technician 1 Lab	1
10-482-122	Wind Technician 2	1
10-482-124	Wind Technician 3	1
	SEMESTER TOTAL	7

THIRD SEMESTER

10-103-131	Micro Excel-Intro	1
10-620-122	Mechanics 2: Intermediate	1
10-620-123	Mechanics 3: Systems	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-806-143	College Physics 1	3
	SEMESTER TOTAL	13

FOURTH SEMESTER

10-664-105	Automation 6: PLC	1
10-664-151	Automation 8: HMI	1
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-801-197	Technical Reporting	3
10-809-172	Race Ethnic & Diversity	3
10-809-198	Intro to Psychology	3
	SEMESTER TOTAL	14

Curriculum *continued*

SUMMER SEMESTER

10-482-126	Wind Technician 4	3
10-482-128	Wind Technician 5	2
10-482-130	Wind Site Assessment	1
10-482-132	Wind (Small) Turbine Maint	1
	SEMESTER TOTAL	7
	TOTAL CREDITS	69

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-413-110 ENERGY INTRODUCTION TO ...provides participants with an overview of electrical energy generation and distribution. Topics include electricity from the following systems: photovoltaic, wind, coal-fired, hydro, and natural gas. Career awareness for maintenance technicians and plant operators is explored.

10-449-113 WIND TECHNICIAN HEALTH & SAFETY ...familiarizes students with the Federal Safety and Health Regulations (OSHA) related to the wind power industry. It introduces the student to proper methods and procedures to eliminate and control hazards to potential injury/illness in the industry. Students will receive training in first aid, CPR, rigging, and confined space and will receive a 30-hour OSHA for General Industry certification upon completion of the course.

10-482-001 WIND TECHNICIAN 1 LAB ...prepares the learner for work at heights. Students will perform equipment maintenance on climbing and fall arrest gear; wear required PFPE, PPE and outdoor apparel when working on a wind energy system; review the causes and results of workplace accidents and injuries; demonstrate adequate health and wellness for climbing and working at heights; demonstrate safe climbing methods; demonstrate proper "ground crew" working habits; and tie basic rigging knots.

10-482-002 WIND TECHNICIAN 2 ...will give the learner ENSA certification in safe access, rescue and confined spaces. The learner will review current legislation and requirements for work at heights; complete a risk assessment; demonstrate proper rigging techniques for rescue equipment; perform a ladder rescue; perform rescues from a wind turbine nacelle, hub and glade; perform a self-rescue; complete a confined space permit; assemble and test a respirator; and use a monitor to test air quality.

10-482-003 WIND TECHNICIAN 3 ...certifies the learner in torque techniques through Snap-On Tools. The student will apply safe and proper technique with use of a click-type torque wrench, dial-type torque wrench, torque screwdriver, torque adapter, and torque extensions; verify appropriate torque techniques on electronic test bench; apply proper technique with the Techangle* wrench; and demonstrate safe and proper torque technique using the Hytorc* equipment.

10-482-004 WIND TECHNICIAN 4 ...strengthens the electromechanical skills of the learner by reviewing arc flash requirements, power quality, power factor correction, transformer calculations, and electrical distribution and transmission systems. Students will explore drive trains used in wind turbines; analyze the causes and results of gear failures; demonstrate proper techniques for gearbox and generator alignment; and compare and contrast synchronous and induction generators.

10-482-005 WIND TECHNICIAN 5 ...will have the learner working with data collected from wind energy systems at LTC using Microsoft Excel, wind energy calculators, and MET tower software. Participants will determine energy production, wind speeds, and wind direction; produce power curves; calculate wind shear; analyze rotor wash, estimate availability and capacity factor of a wind system; estimate payback and return investment for wind systems, and create charts and graphs to summarize the data.

10-482-006 WIND SITE ASSESSMENT ...reviews the basics of site assessment covered in Intro to Wind, but adds more details and techniques on doing a thorough site assessment that is the same quality standard used by the MREA and Focus on Energy*. Similar Site Assessment requirements are found throughout the United States for those who want to use grant money to install a wind energy system. This course prepares the learner to become a certified site assessor.

10-482-007 WIND (SMALL) TURBINE MAINTENANCE ...prepares the learner for servicing a variety of small wind turbines. Participants will climb and inspect towers, torque fasteners, check lubrication in gearboxes, add grease to moving and exposed parts, verify good electrical connections, and perform an overall "system check" on a wind energy system as part of routine maintenance. Some work will be done on campus; other turbines are located off site. Travel is required.

10-482-130 ENERGY-INTRO TO WIND ...an overview of the basics of wind energy. Topics will include wind resources, basic system components, system types, turbine types, applications and tower types.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-482-005 WIND TECHNICIAN 5 ...will have the learner working with data collected from wind energy systems at LTC using Microsoft Excel, wind energy calculators, and MET tower software. Participants will determine energy production, wind speeds, and wind direction; produce power curves; calculate wind shear;

analyze rotor wash, estimate availability and capacity factor of a wind system; estimate payback and return investment for wind systems, and create charts and graphs to summarize the data.10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt Drives, synchronous belt drives, lubrication, and alignment. (Prerequisite: 10-620-121, Mechanics 1: Basic)

10-620-123 MECHANICS 3: SYSTEMS ...application of correct couplings to mechanical systems, Heavy-duty Chain Drives, Maintenance of Brakes and Clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; and an overview of NFPA 70 - machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite:10-620-161, Power Electricity 1: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of Capacitors and Inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers, and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC System, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Prerequisite: 10-664-105, Automation 6: PLC)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-Loop versus Closed-Loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC Drive System performance, specification of AC and DC Drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Prerequisite: 10-664-163, Control 4: Drive Performance)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Prerequisite: 10-664-164, Control 5: Servo Systems)

Wood Tech
Program Code 314102
Technical Diploma

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-Free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Wood Tech prepares students to enter the building construction trades as carpenters and cabinetmakers.

Program Outcomes
- Use materials according to application.
- Adhere to safety standards.
- Use industry terminology.
- Use measuring systems in the industry.
- Visualize final products from blueprints.
- Estimate labor and material costs.
- Erect building and cabinet modules.
- Apply wood finishing.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. However, we recommend a student receive the following scores to be successful in this program. Reading Comprehension: 71; Arithmetic: 72; Sentence Skills: 73. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Carpenter/Cabinetmaker: builds cabinets; is capable in layout, frame, fabrication, assembly, and finish preparation; applies laminated plastic; and installs drawers and door hardware.

Carpenter/Finish: applies interior wall covering and paneling, hangs doors, applies trim, and installs and adjusts cabinets and built-in furniture.

Carpenter/General Builder: works in all areas of building construction; installs interior and exterior finish surface materials, interior floor and ceiling specialties, rough framing, building layout, stair construction, and interior trim and cabinetry.

Carpenter/Millworker: works in a factory setting; mass produces trim, cabinets, and furniture; custom planes and saws; and handles other operations that demand the use of large and specialized machinery.

Carpenter/Rough: erects forms for concrete foundations, rough framing, and roofing for residential and commercial construction; erects scaffolding; installs sheathing, siding, and prepares site for jobs.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Contractor
- Carpenter Apprentice
- Carpenter Journeyperson
- Mill Supervisor
- Journeylevel Cabinet Maker
- Construction Retail Materials Sales
- Construction Wholesale Material Sales
- Specialty Products Sales for Roofing, Trusses, Windows & Doors
- Estimating Technician
- Commercial Finisher
- Expediter

Curriculum
The Wood Tech Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 33 credits.

FIRST SEMESTER
Catalog No.	Description	Credits
* 10-804-101	Math 1-Trades	2
31-403-350	Blueprint Rdg-Construction	2
31-410-301	Wood Tech-Bldg Matl Est	2
31-410-311	Wood Techniques-Carpentry 1	5
31-410-312	Wood Techniques-Carpentry 2	5
31-806-354	Science-Wood Tech	2
	SEMESTER TOTAL	18

SECOND SEMESTER
Catalog No.	Description	Credits
31-403-360	Blueprint Rdg-Cabinetry	2
31-409-310	Commercial Cabinet Finishes	1
31-409-321	Wood Techniques-Cabinetry 1	5
31-409-322	Wood Techniques-Cabinetry 2	5
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	15
	TOTAL CREDITS	33

CURRICULUM NOTE
* Math 1-Trades (10-804-101) must be taken during the student's first semester at NWTC.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- For information about flexible learning options, go to **www.nwtc.edu** and click on **Ways of Learning** or consult a counselor at (920) 498-5444 or (888) 385-6982.
- To support the success of all students, effective SUMMER TERM 2012, General Studies courses will have an associated prerequisite Accuplacer score that students must achieve to enroll in the course. Skills remediation will be immediately available for those who do not reach the minimum score associated with a particular course. Existing program entry benchmarks will remain in effect through spring term 2012.
- Where catalog pages list certificates and/ or technical diplomas that may be applied toward a particular program, this means that 50 percent of the CREDITS lead directly into that program.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-403-350 BLUEPRINT READING CONSTRUCTION ...drawing development/ equipment, blueprints, plot and building layout, scaling and dimensioning practices, symbols, notations, basement/floor elevations, detail/ sectional drawings, residential/industrial print reading, and schedules and specifications.

31-403-360 BLUEPRINT READING-CABINETRY ...sectional detail, cabinet layout, blueprint reading, angle layout, and countertop layout.

31-409-310 COMMERCIAL CABINET FINISHES ...personal protection and safety, abrasives, finishing materials, spray equipment, spray applications and troubleshooting.

31-409-321 WOOD TECHNIQUES-CABINETRY 1 ...size and cut frame members for doweling, mortise and tenon, pocket drilling, calculate panel sizes and supports, assemble cabinet both upper & lower.

31-409-322 WOOD TECHNIQUES-CABINETRY 2 ...identify by and butt unit both upper and lower, size stiles rails panels, setup and cut dovetail joints, size cut and assemble drawer, cut and apply plastic. (Corequisite: 31-409-321, Wood Techniques-Cabinetry 1)

31-410-301 WOOD TECHNICS-BUILDING MATERIAL ESTIMATES ...perform material and labor cost estimates of building foundations, floor systems, superstructures, and exterior and interior finish systems.

31-410-311 WOOD TECHNIQUES-CARPENTRY 1 ...basics of tool and equipment safety, materials common to residential construction and proper application, framing theory of floor, wall, and roof systems.

31-410-312 WOOD TECHNIQUES-CARPENTRY 2 ...theory and practice of roof and stair calculations and construction, as well as exterior finish systems and door and window installation. (Corequisite: 31-410-311, Wood Techniques-Carpentry 1)

Occupational Support and General Education
Course Descriptions

Occupational Support

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures. 3 cr.

10-103-111 MICRO: WINDOWS-INTRODUCTION ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. 1 cr.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, graphics; and merging documents. Requires Windows experience. 1 cr.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience. 1 cr.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation development skills such as: graphics, tables, diagrams, shapes, design themes, sounds, animations, slide transitions, and integration with other software. Requires Windows and MS Word experience. 1 cr.

10-103-163 MICRO: EXPRESSION WEB ...create a Website, customize and manage web pages and images; create and use interactive forms using style sheets; publish Office web pages to a web server. Requires Windows experience. 1 cr.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation. 3 cr.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management. 3 cr.

30-428-337 POWER HOUSE-ECONOMICS ...guide student in combining newly learned principles with available reference material to determine basic powerhouse economics. 1 cr.

32-442-352 WELDING-METAL WORKING PROCESSES ...welding and machine shop safety, blueprint reading, basic arc and oxyacetylene welding techniques, precision measuring tools, layout, use of hand tools, band saw, drillpress, lathe, milling machine. 2 cr.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology. 3 cr.

10-501-104 HEALTH CARE CUSTOMER SERV ...is designed as an introduction to customer service for learners interested in working in various healthcare settings. The learner investigates healthcare systems, safety standards, and the workforce. The learner examines professionalism, interpersonal and written communication skills, and confidentiality as they relate to customer service in healthcare. 2 cr.

10-501-107 INTRODUCTION TO HEALTH CARE COMPUTING ...provides an introduction to basic computer functions and applications utilized in contemporary healthcare settings. Students are introduced to the hardware and software components of modern computer systems. 2 cr.

31-509-302 HUMAN BODY IN HEALTH & DISEASE ...focuses on diseases that are frequently first diagnosed and treated in the medical office setting. Students learn to recognize human body anatomy and the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases. (Prerequisite/Corequisite: 10-501-101 Medical Terminology) 3 cr.

31-512-326 ST: INFECTION CONTROL ...covers the structure, general classification, reproduction and transmission of microorganisms. Emphasis will be placed on the practice of sterile technique and its impact on infection control in the health care setting. 1 cr.

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Prerequisite: 10-664-163, Control 4: Drive Performance) 1 cr.

General Education
Communication

10-801-136 ENGLISH COMPOSITION 1 ...learners develop knowledge/skills in planning, organizing, writing, editing. Students will also analyze audience/purpose, use elements of research, format documents using standard guidelines, and develop critical reading skills. 3 cr.

10-801-185 ENGLISH COMPOSITION 2 ...advanced course: learners develop research, argument, critical thinking skills; read/analyze persuasive media; form critical perspectives (supported by documented primary/secondary research) apply logic, audience analysis, and the writing process. (Prerequisite: 10-801-136, English Composition 1) 3 cr.

10-801-196 ORAL/INTERPERSONAL COMMUNICATION ...the communication process, perception and self-concept, language, listening, nonverbal communication, interpersonal relationships, communication in groups and public communication; prepare and deliver an oral presentation. 3 cr.

10-801-197 TECHNICAL REPORTING ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 10-801-136, English Composition 1 OR 10-801-195, Written Communication) 3 cr.

10-801-198 SPEECH ...fundamentals of effective oral presentation to small and large groups: topic selection, audience analysis, methods of organization, research, structuring evidence and support, delivery techniques, and the listening process. 3 cr.

31-801-385 COMMUNICATING-WRITING ...writing techniques, memos, letters, descriptions, instructions, and the job-seeking process. 1 cr.

31-801-386 COMMUNICATING EFFECTIVELY ...interpersonal communication, including the function of interpersonal communication, listening techniques, perception, non-verbal communication, language, self-concept, conflict resolution and customer service. 1 cr.

Mathematics

10-804-101 MATH 1-TRADES ...provides the opportunity for the learner to develop the knowledge skills process and understanding of whole numbers, fractions, decimals, measurement, trigonometry, integers, algebraic equations, word problems, and practical plane geometry. 2 cr.

10-804-102 MATH 2-TRADES ...provides the opportunity for the learner to develop the knowledge skills process and understanding of solving equations, ratio, proportion, percents, practical plane geometry, solid figures, trigonometry, and statistics. (Prerequisite: 10-804-101 Math 1-Trades) 1 cr.

10-804-107 COLLEGE MATHEMATHICS ...an introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool. (Prerequisite: Recommendation: Accuplacer Arithmetic Test = 65) 3 cr.

10-804-118 INTERM ALGEBRA WITH APPLICATIONS ...algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. (Prerequisites: Recommendation: Accuplacer Algebra Test = 61 OR Accuplacer (College Level Math) = 40 OR Completion of 10-804-110, Elementary Algebra w Apps OR 10-804-120, Math-Tech Algebra with grade "C" or better). 4 cr.

10-804-123 MATH W BUSINESS APPS ...real numbers; basic operations; proportions/one variable; percents, simple/compound interest; annuity; apply math concepts to purchasing/buying process, selling process; and basic statistics with business/consumer applications. (Prerequisite: Recommendation:Accuplacer Arithmetic = 65). 3 cr.

10-804-133 MATH & LOGIC ...students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases. (Prerequisite: Recommendation:Accuplacer Algebra Test = 61) 3 cr.

10-804-195 COLLEGE ALGEBRA WITH APPLICATIONS ...skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatories, and the binomial theorem. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 63 OR Completion of 10-804-118, Intermediate Algebra w Apps or 10-804-131, Math-Algebra/Inter with grade "C" or better) 3 cr.

10-804-196 TRIGONOMETRY WITH APPLICATIONS ...topics include circular functions, graphing of trigonometry functions, identities, equations, trigonometric functions of angles, inverse functions, solutions of triangles complex numbers, DeMoivre's Theorem, polar coordinates, and vectors. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 63 OR Completion of 10-804-118, Intermediate Algebra w Apps; 10-804-195, College Algebra with Apps or 10-804-131, Math-Algebra/Inter with grade "C" or better OR Concurrent enrollment in 10-804-195, College Algebra with Apps) 3 cr.

10-804-197 COLLEGE ALGEBRA & TRIGONOMETRY WITH APPLICATIONS ...those skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatories, and the binomial theorem. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 63 OR Completion of 10-804-118 Intermediate Algebra w Apps or 10-804-131 Math-Algebra/Inter with grade "C" or better.) 5 cr.

10-804-198 CALCULUS 1 ...analyze and graph algebraic expressions, especially conic sections. Develop an intuitive understanding of limits, derivatives and integrals. Apply the derivative and the integral to certain physical problems. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 103 OR Completion of 10-804-195, College Algebra with Apps AND 10-804-196, Trigonometry with Apps, 10-804-197, College Algebra and Trigonometry with Apps or 10-804-132, Math-Geometry/Analytic with grade "C" or better) 4 cr.

31-804-312 MATH-ALGEBRA/TRADES ...signed numbers, order of operations, scientific notation, metric units/measurement, calculator operations, algebra, introductory trigonometry, Pythagorean theorem, solving right triangles. 1 cr.

Natural Science

10-806-112 PRINCIPLES OF SUSTAINABILITY ...prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S., and analyze approaches used by your community to promote and implement sustainability. 3 cr.

10-806-134 GENERAL CHEMISTRY ...covers chemistry fundamentals. Topics: metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws. (Prerequisite: Recommendation: Completion of one year of High School Algebra with a "C" or better) 4 cr.

10-806-143 COLLEGE PHYSICS 1 ...presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversions and analysis, kinematics, dynamics, work, energy, power, temperature, and heat. (Prerequisite: Recommendation: 10-804-110 Elementary Algebra with Apps with a grade of "C" or better OR High School level Algebra with a grade of "C" or better) 3 cr.

General Education
Course Descriptions

Natural Science *continued*

10-806-154 GENERAL PHYSICS 1 ...applications/theory of basic physics principles: problem-solving, laboratory investigation, and applications including unit conversion and analysis, vectors, translational and rotational kinematics/dynamics, heat/temperature, and harmonic motion and waves. (Prerequisite: Recommendation: 10-804-118, Intermediate Algebra with Apps with a grade of "C" or better) 4 cr.

10-806-177 GENERAL ANATOMY & PHYSIOLOGY ...overview of the human anatomy/physiology using a body-systems approach, emphasizing the interrelationships between form/function at the gross and microscopic levels. (Prerequisite: 10-806-134, General Chemistry OR 10-806-155, Chemistry-Basic OR High School Chemistry with a "C" or better OR College Chemistry transfer credit with a grade of "C" or better) 4 cr.

10-806-179 ADVANCED ANATOMY & PHYSIOLOGY ...normal human anatomy and physiology are studied using a body systems approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. (Prerequisite: 10-806-177, Gen Anatomy & Physiology, with a "C" or better) 4 cr.

10-806-186 INTRODUCTION TO BIOCHEMISTRY ...covers organic and biological chemistry necessary for application within Nursing and other Allied Health careers. Emphasis is placed on recognizing the structure, physical properties and chemical reactions of organic molecules, body fluids and acids. Discussion of biological functions and their relationship to enzymes, proteins, lipids, carbohydrates and DNA. (Prerequisite: 10-806-134, General Chemistry or equivalent with lab component with a "C" or better within the past five years) 4 cr.

10-806-189 BASIC ANATOMY ...examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems. (Prerequisite: Recommendation: High School Chemistry or High School Biology with a "C" or better OR College Chemistry or College Biology or College General Anatomy transfer credit with a grade of "C" or better) 3 cr.

10-806-197 MICROBIOLOGY ...history, morphology, physiology, nutritional growth requirements, metabolism, methods of identification. Focus on disease-causing microorganisms, appropriate prevention, treatment, control mechanisms. Specific/non-specific host defense mechanisms, applications of immunology examined. (Prerequisite: 10-806-177, General Anatomy & Physiology, with a "C" or better.) 4 cr.

10-806-286 CALCULUS BASED PHYSICS 1 ...students will develop a conceptual understanding of physics, as they explore the theoretical and experimental treatment of mechanics, material properties, fluids, heat, sound, and wave motion. Critical thinking and sound problem solving skills are stressed throughout the course. (Prerequisite: 10-804-198 Calculus 1) 5 cr.

31-806-354 SCIENCE-WOOD TECHNICS ...measurement systems, problem solving methods, properties of matter, forces, energy, work, power, simple machines, pressure, heat, electricity, and sound. 2 cr.

Social Science

10-809-103 THINKING CRITICALLY & CREATIVELY ...instruction in realistic/practical methods of thinking, including decision making, problem solving, analyzing ideas, troubleshooting, argumentation, persuasion, creativity, setting goals/objectives. Students apply strategies/tools in a variety of situations. 3 cr.

10-809-122 INTRO TO AMER GOVERNMENT ...introduces American political processes and Institutions: focusing on rights/responsibilities of citizens and the process of participatory democracy. Examines separation of powers and checks/balances & the roles of different groups. 3 cr.

10-809-159 ABNORMAL PSYCHOLOGY ...surveys features, causes, assessment and treatment of abnormal behavior through major theoretical perspectives. Introduces the diagnosis system of the DSM-IV, the history, cultural/social differences, current perspectives, diagnosis criteria/treatments. (Prerequisite: Recommendation: Completion of 10-809-198, Introduction to Psychology) 3 cr.

10-809-166 INTRO TO ETHICS: THEORY & APP ...basic understanding of theoretical foundations of ethical thought; analyze/compare relevant issues using diverse ethical perspectives; critically evaluate individual, social/professional standards of behavior--applying a systematic decision-making process. 3 cr.

10-809-172 RACE ETHNIC & DIVERSITY ...basic American values of justice and equality by teaching vocabulary, history of immigration/conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA. 3 cr.

10-809-188 DEVELOPMENTAL PSYCHOLOGY ...defines human development; examines theories; heredity and environmental effects; prenatal development and birth; evaluates biosocial, cognitive psychosocial development through the life span; aging, death, and dying. 3 cr.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues. 3 cr.

10-809-196 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology. 3 cr.

10-809-197 CONTEMPORARY AMER SOCIETY ...the major social institutions within the American society: government, family, education, religion, and economic system. 3 cr.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings. 3 cr.

10-809-199 PSYCHOLOGY OF HUMAN RELATIONS ...decision making, motivation, conflict resolution, learning strategies, growth and adjustment, diversity, psychological theories, relationships, psychological disorders, stress, career analysis, social psychology, and lifespan development. 3 cr.

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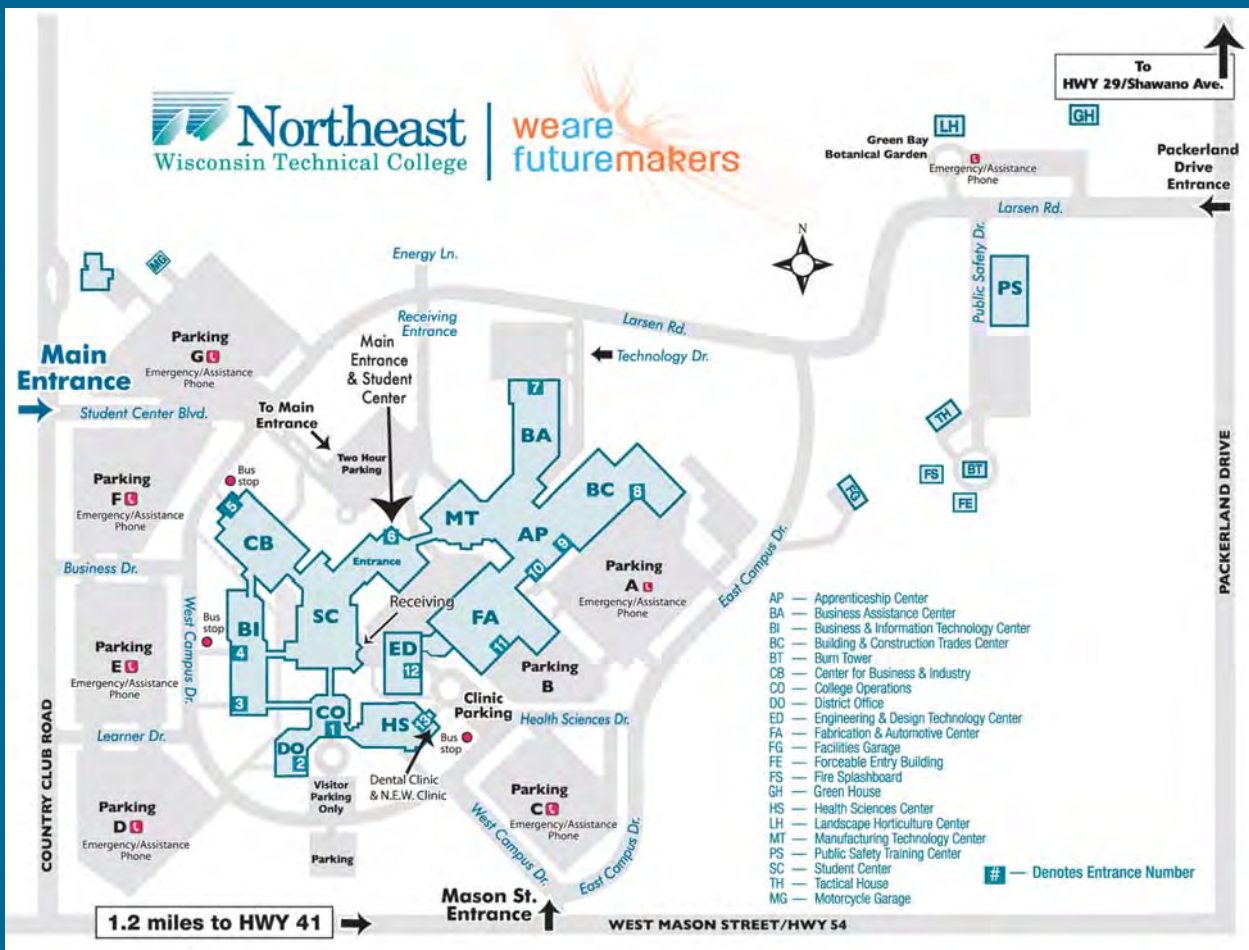
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